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On subsistence-type rural independent retailers and crowdfunded microfinance—Prosocial lending, nudges, and unintended consequences

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Abstract

Much of the extant scholarship in supply chain management (SCM) has had a developed world focus, although most of the global population resides outside this area. SCM scholars are now recognizing this limitation in the coverage of our communities' research. They have recognized that the logistical challenges of getting products to these underserved markets at the bottom of the economic pyramid (BOP) may be fundamentally different from the "big box" mindset that prevails in the west. There is growing recognition that supply chain entrepreneurship is critical to the logistics and physical distribution systems that can get products to such markets in a cost-effective manner. Yet, such entrepreneurs, who are often small, and weakly integrated into the global economy, face several challenges in their daily business. Many of them rely on microfinance to fund their business. Yet, the microfinance model itself is changing into a web-supported crowdfunded model. The current study investigates how an entrepreneur's circumstances with regard to their borrowing status as a first-time borrower, and their intent with regard to business expansion influence their success in fundraising on a crowdfunding platform. Results reveal that BOP entrepreneurs who are "repeat borrowers" have difficulty in obtaining funding for their business plans.

KEYWORDS

bottom of the pyramid, emerging markets, entrepreneurship, microfinance

INTRODUCTION

The focus of much of extant supply chain management (SCM) scholarship has been on investigating, managing, and optimizing the distribution of products across well-organized, relatively modern supply chains. Such distribution systems typically involve substantial automation, economies of scale, and formalized supporting infrastructure, including state-of-the-art physical, technological, and financial systems to support and facilitate the flow of products and services (Hong et al., 2019). In fact, all these prerequisites are now so readily available in the developed world that they are almost taken for granted (c.f., Flynn et al., 2015).

At the same time, however, there is also growing recognition that traditional SCM scholarship may have inadvertently focused only on issues related to a *minority* of the world's population, limiting our understanding of supply chain issues germane to the people who *do not* reside in places with highly developed markets and distribution systems (Flynn et al., 2015; Rao et al., 2019; Sodhi & Tang, 2016). For example, there are more people living in India than in all of Europe and the United States combined, and most of them live in rural areas where

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access to sophisticated SCM infrastructure is hardly a given (Karnani, 2007; Mahapatra et al., 2019; Sodhi & Tang, 2016). Similarly, Africa is home to over 1.2 billion people, which is more than 4 times the U.S. population. Most of this population lacks access to the infrastructure that is taken for granted in the developed world (e.g., 24/7 electricity, fuel, climate-controlled storage) (Omisore, 2018). Yet, Fawcett and Waller (2015) found that "a keyword search using both 'bottom' and 'base of pyramid' (BOP) identified only one base-of-the-pyramid article in our discipline's three top journals." They concluded that "meaningful bottom-of-the-pyramid supply chain research is largely omitted in the extant literature." Therefore, arguably, if SCM scholarship is to truly become representative of the challenges of the broader global community, then focusing on the issues specific to such under-researched markets needs to become increasingly important (c.f., Duarte et al., 2019; Pullman et al., 2018).

While some recent research has indeed answered this call for more investigation on issues facing those at the bottom of the proverbial economic pyramid (e.g., Hong et al., 2019; Iyengar et al., 2021; Nilakantan et al., 2019; Pullman et al., 2018), more needs to be done. For example, Fawcett and Waller (2015, p. 239) argue that "supply chain systems have not emerged to profitably create and deliver products to the world's poorest citizens. *We can do better*" (emphasis added). Similarly, Hong et al. (2019) propose that because traditional distribution systems are of limited use in such markets, one needs to go beyond the traditional domain of SCM research and investigate issues of importance to low-income marketplaces. The prevailing view in many of these recent calls to action has been that not only is such scholarship important from the standpoint of social sustainability (e.g., Mahapatra et al., 2019; Pal & Altay, 2019) but also is also good for overall business (Bals & Tate, 2018; Iyengar et al., 2021). Indeed, there are more than 2.5 billion people around the world who live in such low-income countries (UN-FAO, 2015). As the potential for continued growth in the developed world begins to shrink given aging populations, low birth rates, and market saturation, many major multinationals are looking to these countries as the next growth frontier (Cao & Shi, 2021; Duarte et al., 2019; Mol et al., 2017).

Despite this interest however, these markets continue to be challenging to access for many major corporations (Fawcett & Waller, 2015). The well-documented problem of prohibitive last-mile logistics cost (both direct and indirect) is a leading reason for this (Iyengar et al., 2021; Prahalad, 2009; Vachani & Smith, 2008). It has therefore been argued that for large multinational firms to be able to open these markets to their goods and services, one needs to engage in innovative and collaborative supply chain practices that they may not have heretofore followed (Pullman et al., 2018; Rao et al., 2019; Sodhi & Tang, 2016).

One such collaborative supply chain practice involves upstream corporations cultivating and relying on microentrepreneurship in areas such as retail, product distribution, and last-mile logistics (e.g., small retail outlets and kiosk operators; c.f., Sodhi & Tang, 2016). These entrepreneurs often act as the last-mile integrators, channel partners, and labor providers for the larger upstream companies, who use them to get their goods to market (c.f., Gold et al., 2020; Sodhi & Tang, 2016). For example, in investigating several detailed case studies of large multinational corporations that successfully operated in BOP markets, Schrader et al. (2012) observed one commonality—each one of them incorporated local microbusinesses that took over aspects of the last mile (i.e., marketing, retail, and distribution; London & Hart, 2004; Nilakantan et al., 2019). Specifically talking about this issue, Pal and Altay (2019, p. 163) argue that such collaborations with local "micro-enterprises could help [larger upstream corporations] overcome the high cost of delivering the last mile." These microenterprises are sometimes referred to as subsistence-type rural independent retailers (SRIs) and are seen as the "key to success in BOP markets" (Sarkar et al., 2018, p. 54).

Such SRIs often face regular adversities in their operating environment, which often challenges their viability, continuity, and growth (Chapagain & Raizada, 2017). Consider, for example, socioeconomic disruptions in the business climate (c.f., Heltberg & Lund, 2009). It has been demonstrated that those at the BOP face such disruptions at a much higher rate than those in more affluent markets (Heltberg et al., 2015; Heltberg & Lund, 2009). Because of this, SRI-type ventures at the BOP are often liable to collapse (Calton et al., 2013). For example, recent studies suggest that only about 12.5 percent of them report the ability to bounce back from such disruptions (Iyengar et al., 2021). This, then, can have repercussions throughout the supply chain, as such failures downstream can bottleneck the distribution system for the many larger upstream corporations who may depend on them to get their products in front of potential buyers in such markets. To address this problem, we contend that is important to understand how recent developments in the BOP space influence SRIs bounce back and resiliency. Our focus in this paper is on one solution that is recently gaining a lot of attention in the literature—crowdfunded microfinance (e.g., Anglin et al., 2022; Berns et al., 2021; Luo et al., 2022) and how it may or may not ameliorate the extant problem.

We use data from one of the leading crowdfunded microfinance intermediaries in the world—Kiva.org and observe the fate of borrowing requests by SRIs that were posted there over a 4-year period (i.e., 2016–2019). We seek to answer the following research question—*How do SRIs fare, when trying to generate funding for their entrepreneurial ventures?* Because of how entrepreneurship is inherently fraught with risks and likelihood of failure (Ayala & Manzano, 2014; Golicic & Sebastiao, 2011), and how resilience and the ability to bounce back from failure is fundamental to an entrepreneurial mindset (Jenkins et al., 2014), we are particularly interested in whether the experiences of said SRIs during fundraising vary based on whether they are first-time or repeat borrowers, and whether they are seeking funding for business expansion or not. Our research question has important implications for the development of BOP supply chains because chains. If SRIs are penalized by lenders for repeat borrowing, then this may create a disincentive for them to engage in the kind of business practices which may lead to repeat borrowing. This would mean that they would likely only pursue "safer" opportunities even if those may result in limited growth and development in the long term for themselves and for their communities. This may consequently have deleterious impacts for the supply chains of the upstream corporations that seek to build a logistical pathway to the BOP marketplace through them (c.f., Pullman et al., 2018; Sodhi & Tang, 2016). On the contrary, if they are not penalized (or even potentially rewarded) for repeat borrowing, this may encourage more risk-taking, and investment in ventures that may result in higher potential upside, growth prospects, and enhanced entrepreneurial resilience over the long term.

> Our results suggest that repeat borrowers may pay a penalty in that their requests are *less* likely to be fulfilled as compared to first time borrowers (The one exception to this is if a repeat borrower is specifically requesting for funding to expand an existing business, in which case this penalty of being a repeat borrower is somewhat ameliorated). This is the *opposite* of what one expects to see in the developed world where having a borrowing /credit history is considered a positive. Our findings therefore lend further credence to Fawcett and Waller (2015) who have argued that BOP markets are unique from traditional (i.e., western) ones, and need to be investigated differently – insights that are taken for granted in western markets, may not hold BOP markets.

LITERATURE AND CONCEPTUAL BACKGROUND

Literature review

Carter et al. (2015) proposed that SCM involves not only the *physical supply chain* (i.e., in which one may see movement of goods) but also the *support supply chain* (i.e., in which one may see movement of information and money). This is consistent with Mentzer et al. (2001) who also argued that SCM involves a focus on efficiently addressing three kinds of bidirectional flows—products, financial resources, and information. The current study involves elements of two of these. Obviously as we have argued before, at the BOP, SRIs are critical for facilitating the first—that is, *product flow*. However, since our focus is from the perspective of access to credit, the second—that is, *financial flow*—is important as well.

Product flow at the bottom of the pyramid

Prior to discussing the unique supply chain and distribution challenges of the BOP, it is obviously going to be important to first define the domain of what the BOP encompasses. In the early days of BOP-related writings, the general understanding was that income thresholds should be used as the yardstick to measure whether someone (or some community) fell into this category (e.g., Banerjee & Duflo, 2007; Prahalad, 2009), with commonly accepted thresholds being somewhere between daily incomes of $2 and $5 (Singh et al., 2015). More recently, however, it has been argued that uneven inflation diminishes purchasing power unevenly across space and time (Nilakantan et al., 2021). Further, especially from a product distribution and supply chain standpoint, the challenges encountered by rural populations in emerging economies are generally similar (e.g., bad roads, lack of infrastructure, and unreliable utilities; Rao et al., 2019). At the same time, even many relatively poor/less developed countries are large and have cities that may be just as infrastructurally developed as those in more advanced economies. Therefore, it has been argued that for the purposes of SCM research at least, the definition of the BOP should be based on *geography*, rather than on *income* (Iyengar et al., 2021; Nilakantan et al., 2019). As per this view, therefore, one can consider the BOP to encompass most rural populations in lower-income countries (e.g., Mahapatra et al., 2019; Pal & Altay, 2019). This is the view that the current study follows.

It is not really a surprise that there are several challenges that preclude companies from creating physical distribution systems that can cost-effectively service this

segment of the global economy (Avasthy et al., 2015; Pullman et al., 2018; Sodhi & Tang, 2016). Ever since the concept of viewing those at the BOP as viable consumers was proposed in the mainstream literature, the challenging physical distribution and logistics needed to get products to them in a manner that would be economically feasible, has been cited as the largest barrier to doing business with this population (c.f., Prahalad, 2009; Simanis & Duke, 2014; Simanis, 2012). Several factors contribute to this problem (e.g., small dollar value of orders, lack of storage and distribution infrastructure, and bad roads; Karamchandani et al., 2011; Prahalad, 2009; Vachani & Smith, 2008). Therefore, companies often report that their traditional distribution systems are of limited use in such markets.

Instead, it has been argued that access to the BOP can be accelerated through incorporating SRIs to handle the last link (Gold et al., 2020; Nilakantan et al., 2019; Sarkar et al., 2018; Sodhi & Tang, 2016). Indeed, Sodhi and Tang (2016, p. 125) argue that "people in this segment already are – or have the potential to become – suppliers, distributors, and retailers for other companies, expanding the reach and efficacy of existing supply chains." Several such instances are discussed in the popular press and academic literature, where large multinationals partner with SRIs to overcome BOP-specific last-mile distribution challenges (Chelekis & Mudambi, 2010; Gold et al., 2020; Pullman et al., 2018; Schrader et al., 2012; Sodhi & Tang, 2016). Indeed, a detailed review of over 45 recent BOP studies identified such collaborative distribution efforts as the first major theme that emerges in BOP scholarship (Joncourt et al., 2019).

Consider, for example, *Coca-Cola's* multisegment distribution system in Africa. Based on a CSCMP report, Iyengar et al. (2021) discuss how the *Coca-Cola Company* set up several thousand microdistribution points across East Africa, which were then linked with several more local distributors. The local distributors would collect the product directly from *Coca-Cola's* microdistribution centers and then use simple (often nonmotorized) vehicles such as (e.g., pushcarts, bicycles, and wagons) to distribute the product to various SRIs as well as door-to-door to end consumers. Instead of making large deliveries to big-box-type retailers as is common in developed countries, the company therefore pivoted to making frequent (but small) deliveries through SRIs, who may otherwise have not been able to afford stocking up large amounts of inventory. As a result of this unique distribution strategy, the company was able to distribute small lot sizes across difficult terrain while keeping costs down and ensuring profitability. Over the years, this distribution has come to account for over 80% of *Coca-Cola's* sales in that part of the world (Avasthy et al., 2015). Other organizations like *Living Goods* in Uganda and *VidaGas* in Mozambique have also engaged such SRIs to address the last-mile distribution challenges of items like household goods and fuel (Iyengar et al., 2021; Watson & Kraiselburd, 2009). Similarly, the company *Indomie Noodles* has developed a large network of several thousand SRIs, many of whom may not even operate a physical store but instead, drive around the country on mopeds, scooters, and three-wheelers, and serve as the last-mile distributors and retailers of their products (Leke et al., 2014). Pullman et al. (2018) discuss the example of *Vision Spring*, an eyewear company that collaborates with a network of SRIs to distribute affordable reading glasses in various countries, and *Unilever* who collaborates with numerous SRIs to distribute products, including soap and toothpaste. Zomorrodi et al. (2019) discuss the example of the Spanish company Danone who engaged various SRIs to distribute their products to far-flung areas in BOP markets. While a detailed description of all such SRI collaboration case studies is beyond the scope of this paper, we direct interested readers to Schrader et al. (2012), Sodhi and Tang (2016), and Joncourt et al. (2019) who provide detailed looks at several such innovative BOP last-mile distribution solutions involving SRIs.

A review of the case studies profiled in prior research reveals one common theme—the aim from the upstream partner (i.e., larger corporation) is nearly always to cut down on logistics and distribution costs by outsourcing the last-mile function and including the local community into the supply chain (Hall & Matos, 2010; Kandachar & Halme, 2007; Rangan et al., 2011; Zomorrodi et al., 2019). Therefore, SRIs act as outsourced integrators, distributors, and retailers of sorts (Duarte et al., 2019; Rosca et al., 2019; Schrader et al., 2012). Indeed, based on such observations, Pal and Altay (2019, p. 163) argue that SRIs "could help overcome the high cost of delivering the last mile."

Financial flow at the bottom of the pyramid

Along with product flow, the management of financial flows is also an important supporting pillar of supply chains (Mentzer et al., 2001). Researchers refer to this as financial supply chain management (FSCM), which is defined as the "optimized planning, managing, and controlling of supply chain cash flows to facilitate efficient supply chain material flows" (Wuttke et al., 2013, p. 773). Unlike the developed world, in the BOP space, the FSCM domain is unclearly demarcated because there may be relatively limited sophistication in terms of the breadth of financial instruments and interventions available to participants (Rao et al., 2019). Instead, most aspects of FSCM at the BOP are addressed through one relatively general intervention—that is, microfinance, which involves

providing very small loans to entrepreneurs to support their entrepreneurial efforts (Nilakantan et al., 2021). Microfinance has been shown to be a critical element of robust supply chains at the BOP (Iyengar et al., 2021) and has been credited with helping promote entrepreneurship in several low-income countries (e.g., Akula, 2008; Prahalad, 2009). Microfinance organizations encourage the poor to engage in entrepreneurial activity by creating and growing their own businesses (Baklouti, 2014; Chliova et al., 2015). Therefore, researchers argue that access to microfinance is also a critical element of BOP supply chains (Iyengar et al., 2021; Nilakantan et al., 2019; Pullman et al., 2018; Rao et al., 2019).

In addition to this direct SCM-related value of microfinance, researchers also take the view that microfinance may help alleviate poverty by empowering the poor to participate in markets, generate income and become more self-sufficient (Siwale & Ritchie, 2012). Thus, microfinance also addresses recent calls in the SCM discipline to take a more *community well-being* type view of SCM (c.f., Davis-Sramek & Richey, 2022; Mollenkopf et al., 2020). Consider, for example, the much-discussed *Grameen Bank* in Bangladesh which has been so successful in poverty reduction and BOP development that its founder was honored with the Nobel Prize. Similarly, Battilana and Dorado (2010) discuss two Latin-American microfinance companies (i.e., *BancoSol* and *Los Andes*) who have been able to achieve the twin goals of commercial profitability and poverty reduction in Bolivia. Indeed, it comes as no surprise that the World Bank believes that microfinance is responsible for large-scale eradication of poverty and hunger, improved education, promotion of gender equality, reduction in child mortality, and improvement in maternal health (Banerjee et al., 2015).

Prosocial lending—The future of BOP finance?

While the discussions above present encouraging signs for the potential of microfinance, of late, there are also considerable signs for concern regarding the industry's health. For example, it had been argued that traditional operational model of microfinance results in substantial operational inefficiencies, including high default risk (Roy & Chowdhury, 2009), limited access to low-cost capital (Bogan, 2012), low operational efficiency (Balkenhol & Hudon, 2011; Drake & Rhyne, 2002), and insufficient monitoring of the use of subsidies and donations (e.g., Yunus, 2000). Probably because of this, many microfinance institutions are not self-sustaining (e.g., Cull et al., 2007; Mersland & Strøm, 2010). For example, Cull et al. (2016) reported that out of 315 "for profit" microfinance institutions (MFIs) that reported profitability statistics to the Microfinance Information Exchange, only 57% were profitable. Similarly, according to the 2016–17 annual report from the National Bank for Agriculture and Rural Development (NABARD) in India, nonperforming microfinance loans in the country grew by 8.6% in the financial year 2016–17, with some institutions showing rates as high as 10.25%. This report also stated that "high outstanding joined with low disbursement implies a situation where repayment rate is low and many of the self-help groups are not eligible for subsequent doses of loans because of overdue loans" (NABARD, 2016, p. 27).

Therefore, it has been suggested that the future of the microfinance movement lies in a new format of microlending—that is, Internet-supported crowdfunded microfinance (e.g., Anglin et al., 2020; Berns et al., 2020; Heredia et al., 2020; Yum et al., 2012). In this format also, the goal is microlending, but instead of the MFI lending from a stockpile of funds on which it then waits for collections to recover its money, it collaborates with Internet-based crowdfunding platforms to tap into a global network of crowdfunders. These crowdfunders are typically private individuals who may have an interest in social upliftment, prosocial lending, or world development, and may lend in their personal capacity (Beaulieu et al., 2015). They study the individual projects that are posted online on the crowdfunding platform and make lending decisions on a per-project basis (Marakkath & Attuel-mendes, 2015). This form of lending has also sometimes been called *prosocial lending* (Anglin et al., 2022; Luo et al., 2022) because these crowdfunders (sometimes called prosocial lenders or second-tier lenders) do not typically receive any interest on their loans. Instead, their motivation for lending may be intrinsic, and driven by egalitarian or social goals (c.f., Anglin et al., 2022; Berns et al., 2020).

Because MFIs can access globally, several million crowdfunders at relatively low cost on such Internet-supported crowdfunding platforms, they may be able to leverage fundraising on a scale not seen heretofore (Anglin et al., 2022). Further, researchers have argued that unlike the traditional models of microfinance under which MFIs may over time get tempted to abandon their social mission and instead chase profits (c.f., Mia & Lee, 2017), crowdfunded microfinance may be more likely to *stay the course* with the social mission of poverty elimination and social upliftment (Anglin et al., 2020). Further, because of its operational practice of Internet-based fundraising, crowdfunded microfinance can speed up the cash-to-cash cycle for MFIs as well as simultaneously reduce risk and exposure. Probably because of these reasons, researchers have sometimes praised crowdfunded microfinance as "the new hope" for the microfinance sector (Luo et al., 2022, p. 373).

Various examples of such crowdfunded microfinance platforms exist, including *Kiva*, *WWGF*, and *Babyloan*.

According to the WorldBank (2017, p. 4), such "crowdfunding platforms have created low-cost commercial models that can be leveraged by formal financial institutions to increase operational efficiency and offer a wider array of products to low-income populations." Given the explosive growth in this sector, it has been estimated that the size of the crowdfunded microlending may grow to be double the size of the global venture capital industry and may far exceed traditional microfinance by 2025 (Assadi et al., 2018; Attuel-Mendes, 2016; Luo et al., 2022). Other estimates suggest that crowdfunded microfinance may be able to add as much as 25% to the overall capital pool of poor countries compared to what is currently available to them through *all* sources combined (Fonrouge & Bolzani, 2019). Indeed, researchers suggest that by providing microfinance to needy and deserving borrowers, crowdsourced microfinance can accelerate job creation, innovation, and economic growth in underserved communities around the world at a pace that traditional microfinance just cannot match (Bagheri et al., 2019).

Since the MFI is merely an intermediary in this new age collaborative microfinance platform, researchers have been interested in finding out how the crowdfunders decide whether to lend to a potential borrower or not (e.g., Anglin et al., 2020; Dorfleitner et al., 2021; Hoegen et al., 2018). The reason for this is that "dependence on capital subsidies from the crowd provides strong incentives for microfinance institutions (and other development-oriented institutions) to focus on projects or clients who suit the preferences (of the crowdfunders)" (Jenq et al., 2015). In other words, as the microfinance sector morphs more toward such a crowdfunded model, the projects that it will fund will likely be reflective of the kind of projects toward which the crowdfunders show a preference. With MFIs seeking to decrease their risk and capital outlay, in addition to trying to compensate for their extant challenges in fundraising (Anglin et al., 2020), it is natural that they will implicitly prefer to focus on projects that they *know* will get repaid quickly (i.e., the projects that will be fully funded by the crowdfunders). This has direct implications for the BOP supply chain, which as we have discussed previously, is highly contingent on SRIs getting funding through such platforms (e.g., Iyengar et al., 2021; Nilakantan et al., 2019; Pal & Altay, 2019).

In summary therefore, based on our literature review, the following causal chain emerges. For companies that try to work with the BOP, the success of their efforts is contingent on the existence of SRIs who can act as channel partners to aid in cost-effective last-mile logistics (Iyengar et al., 2021). At the same time, such SRIs continue to face business disruptions very frequently (Heltberg & Lund, 2009). Access to finance is, therefore, an important factor in determining the persistence of said SRIs (Rao et al., 2019). Because an increasing number of MFIs that lend to such SRIs are turning to crowdsourced/prosocial microfinance to provide the liquidity for their operations, it becomes important to study how the crowdfunders on such platforms react to funding requests from SRIs, because the ventures that these crowdfunders show higher interest in funding, will likely be the kind of ventures that will get "picked up" by the MFI in the first place.

THEORETICAL UNDERPINNINGS AND HYPOTHESES

We contend that Nudge theory (Thaler & Sunstein, 2009) provides a good theoretical anchor for our research model and hypotheses, since it focuses on addressing individual decision making in the context of external information stimuli.

Underlying theory

Nudge theory (NT) finds its conceptual origin in the fields of information and behavioral economics—that is, the study of how information, either explicit or implicit, affects decisions (Kahneman, 2011; Thaler & Sunstein, 2009). Specifically, NT focuses on how information that is communicated through implicit "nudges" (i.e., indirect suggestions) helps to facilitate a decision on the part of the decision maker (Kosters & Van der Heijden, 2015; Thaler & Sunstein, 2009). As per the tenets of this theory, there exists a "choice architecture" which consists of all the outside forces that may subtly guide a decision-maker's decision in one direction or another (Abdukadirov, 2016). An application of behavioral triggers (i.e., nudges) may alter this choice architecture of decision makers, often without their realization (Thaler & Sunstein, 2009). These behavioral triggers may, for example, be changes to the environment (e.g., olfactory or social), perception (e.g., emotional priming), availability (e.g., convenience or ease of access), or knowledge-based changes (e.g., labelling; Arno & Thomas, 2016). Nudges are therefore important mechanisms that may explain a decision-maker's actions.

For something to be considered a "nudge," it should by itself do nothing to fundamentally *forbid* or *force* a choice, or even to change the economic incentives associated with said choices (Murakami & Tsubokura, 2017; Thaler, 2018). Instead, it may merely make one choice more alluring at a subconscious level—that is, modify the choice architecture. Further, nudges must be cheap to implement for the party that is doing the nudging (sometimes called the choice architect) and easy to avoid for the party that is receiving the nudging (sometimes called the

decision maker; Kosters & Van der Heijden, 2015). For example, one famous nudge is the housefly painted onto the porcelain urinals at Schiphol Airport in Amsterdam that encourages users to aim better (Thaler & Sunstein, 2009).

While the original conceptualization of Nudge theory was in the context of public policy, it has since been applied in many other domains as well. For example, it has been argued that because food consumption tends to be a mostly habitual, unreflective process, it is highly likely to be influenceable by nudges (Lehner et al., 2016). Following this guidance, researchers have demonstrated that by moving unhealthy food items away from eye level in stores may result in a reduction in the consumption of such foods (Thorndike et al., 2014). Similarly, researchers propose that individuals' energy use in home appliances can be influenced by changing the "default option" on new appliances, for example, by changing the default setting to where they must *opt out* of energy efficiency options instead of having to *opt in* (Baddeley, 2011; Momsen & Stoerk, 2014). In one of the most famous examples of nudges in action, a leading public university reduced its paper consumption by 44% by changing the default setting on all campus printers to "print on both sides" from the original "print on one side" (Sunstein & Reisch, 2014). Even though users could easily revert back to the previous setting of printing on only one side, few did. Relatedly, discussing an application of Nudge theory in public health, Murakami and Tsubokura (2017) reported the case of a town in Japan where there was an 83% difference in testing after exposure to a public health scare, depending on whether an individual was nudged to do so by public interest messaging.

Closer to our own discipline of logistics & supply chain management (LSCM), Nudge theory has been applied to investigate supply chain transformation (Wang & Pettit, 2022), carbon emissions (Yin et al., 2020; Dhanorkar & Siemsen, 2021), diversity issues in sourcing and procurement (Atal et al., 2019), recycling behavior (Flygansvaer et al., 2021), and driver safety (Choudhary et al., 2022). Even at the BOP, Nudge theory has been shown to be applicable in that fertilizer purchases and use were enhanced for Kenyan farmers who receive nudges in the form of visits from officials (Duflo et al., 2011).

Hypotheses and research model

According to Stiglitz (1989), information that is particularly relevant in shaping the recipient usually communicates one out of two types of cues. The first is about *characteristics* (e.g., quality or reliability; c.f., Rao et al., 2019; Wallenburg et al., 2021), while the second is about *intent* (e.g., what one is likely to do; c.f., Moss et al., 2015). In the current context, we are interested in *both* these types of information. Specifically, in terms of *characteristics*, we are interested in investigating whether the SRI is a first-time borrower or repeat borrower, while in terms of *intent* we are interested in what the SRI seeks to do with the funding (i.e., business continuation versus business expansion). Both meet the criteria to be classified as nudges as per the tenets of NT. We explain this below.

Thaler and Sunstein (2009, p. 6) argue that "Nudges are not mandates..." For example, they argue that "Putting fruit at eye level (hoping that people then choose fruit over unhealthy alternatives) counts as a nudge. Banning junk food does not." In other words, as per Nudge theory, the recipient of the nudge should in no way be *mandated* to act in a certain manner on account of the nudge. Additionally, there are several ways to nudge, including making the desired option the default, using social influence, or presenting information that one feels may be helpful in steering the decision-maker's choice (c.f., Stoknes, 2015; Thaler & Sunstein, 2009; Flygansvaer et al., 2021). Flagging an SRI as a repeat borrower is an example of the latter, since crowdfunders will still be able to independently choose whether to lend to them or not, but this information may help steer the decision maker (i.e., crowdfunder) toward the flagged choice. Similarly, flagging their loan request as a loan whose intended purpose is business expansion also meets this criterion because it in no way forces the crowdfunder to choose one SRI over another but may steer them in one direction by giving a cue regarding business success (or lack thereof). Given this assurance of these two characteristics as bona fide nudges, we now proceed to the development of our research hypotheses.

Borrower characteristics—repeat borrowers

Entities in a nudging situation who design or emit nudges are referred to as "choice architects" (Thaler & Sunstein, 2009). By presenting nudges designed to influence a decision-maker's actions, these choice architects are in effect attempting to shape (i.e., "architect") the decision-maker's choice. Usually, choice architects' nudges are guided by their own conception of the "right choice" and may be reflective of their own biases and motivations (Baldwin et al., 2011). Thaler and Sunstein (2009) acknowledge that many individuals may be choice architects without even knowing it because many nudges (and their consequences) are entirely unintentional, and the individuals responsible for said nudges may never even be aware of the circumstance they have created. Further, these nudges may not always be received in the manner that they were intended, sometimes resulting in different outcomes than were intended when the choice architect initiated the nudge (c.f., Seward & Soled, 2020).

We contend that such a situation plays out in the current context, with respect to a SRI's status as a repeat borrower because there is a team of volunteers (i.e., flaggers) that "flag" a loan request as coming from a repeat borrower. Effectively therefore, they serve as choice architects in this nudging situation. The crowdfunders are obviously the recipients of this nudging and serve as the decision makers since they are the ones who need to decide to whom they want to lend their money.

It has been suggested that prosocial lenders often view their microloans as contributions for the social good, with many funders receiving little or no interest payments for their loaned amount (Bagheri et al., 2019; Gleasure & Feller, 2016). In such cases, lending may follow a utilitarian mindset of doing the greatest good for the greatest number (Burtch et al., 2014; Fonrouge & Bolzani, 2019). This would mean that a "repeat ask" may be seen as less deserving than a "first ask." There is prior evidence in the literature to suggest that there is indeed a strong element of donor fatigue in cases of repeated asking by aid recipients, such that a lender's enthusiasm to help decreases with repeated asks (Andreoni, 2006; Sakakibara et al., 2019; Van Diepen et al., 2009). In such a situation, therefore, one would expect that a "repeat borrower" status assigned to a loan request may turn out to be a nudge with an unintended consequence since the crowdfunders may determine that their assistance would be better utilized if it were given to someone new instead (i.e., first-time borrowers) following the moral principle of the "greatest good for the greatest number" (Prochaska et al., 1994). Therefore, whereas the choice architect (i.e., the flagger) may identify the SRI in the system as a repeat borrower, with the view that such identification may serve as a positive nudge, it may have the opposite effect in reality. Indeed, Nudge theory does leave room for such unintended consequences of nudges wherein the actual effect of the nudge may be different (or even opposite) of what the choice architect (in this case, the flagger) intended (DiGiacomo, 2020; Seward & Soled, 2020; Thunström et al., 2018). This leads to our first hypothesis.

> **H1.** There is a negative relationship between a borrower's status as a repeat borrower and the extent to which their loan request gets funded (i.e., "Funded Ratio").

Continuing with the principle of nudges influencing the decision-making process of donors in unintended ways, we now turn our attention to the amount contributed to the SRI (i.e., borrower) by each individual crowdfunder. The same nudge mechanism that impacted our previous dependent variable should also influence this one. Specifically, the repeat borrower nudge is likely to be seen as a type of repeat ask of the lender (Jawaid, 2010). It is likely that the crowdfunders may therefore take a negative view of the repeat borrower status, since the belief may be that after having borrowed once, the borrower should then become self-sufficient (c.f., Sakakibara et al., 2019; Van Diepen et al., 2009). Indeed, it has been argued that persistent calls for charitable contributions result in dramatic declines in rates of giving over time (Brown et al., 2014). While some authors term this phenomenon "donor fatigue" (Brown et al., 2014), others term it "compassion fatigue"—with both terms referring to the "numbing of concern towards social problems" (Kinnick et al., 1996, p. 687). It has also been argued that such fatigue is usually accompanied by decreased contributions to "giving" requests, such that even when a lender does cross the initial hurdle of giving *something*, the amount that they give may be lower (Estren, 2018). From a theoretical standpoint, this is called "nudge fatigue" (c.f., Berg, 2018; Last et al., 2021), which is the voluntary ignoring of nudges shown by decision makers, when nudge thresholds are crossed. In our case, this means that even if the crowdfunder may decide to give in response to a request, if the request is a repeat request, ceteris paribus it is likely that they would give a lower amount than if it was not a repeat request. This leads to our second hypothesis.

> **H2.** There is a negative relationship between a borrower's status as a repeat borrower and the amount that each contributing crowdfunder contributes to their loan request (i.e., "Loan per Lender").

Because each contributing crowdfunder will contribute a lower amount to their funding request than for an equivalent first-time borrower (as per H2) it just stands to reason that for the same loan amount raised, repeat borrowers are likely to need contributions from an increased number of crowdfunders—effectively implying increased time, resources, and uncertainty. In other words, the number of crowdfunders that will need to pitch in to get the SRI to the same fundraising end goal will be higher for repeat borrowers than it will be for first-time borrowers. This leads to our third hypothesis.

> **H3.** There is a positive relationship between a borrower's status as a repeat borrower and the number of lenders (i.e., crowdfunders) who funded their loan request (i.e., Lender Count).

Borrower intent

As we have argued before, nudges may influence recipients by communicating one out of two kinds of

information—*characteristics* or *intent*. While H1–H3 referenced the former (i.e., borrower characteristics), the next three hypotheses reference the latter (i.e., borrower intent). Specifically, we focus on whether the borrower intends to use the borrowed amount for *expansion* of an existing business or for setting up a *new* business.

From a Nudge theory point of view, we contend that an SRI's voluntary engagement in business expansion may have the effect of a nudge that can shape the decision making of potential lenders (c.f., Steigenberger & Wilhelm, 2018). Business success (especially at the BOP) often encourages entrepreneurs to further engage in co-creation and growth (Sama & Casselman, 2013). Voluntary business expansion may therefore be seen as a sign of relative stability, predictability of future cash flows, and business success (Seelos & Mair, 2007)—that is, a nudge demonstrating success. This is consistent with the view of BOP scholars who argue that given the lack of formal financial documents, at the BOP, such alternative insights are sometimes seen as indicators of business prosperity (c.f., Iyengar et al., 2021). At the same time, borrowing for purposes *other* than business expansion would likely indicate difficulty with cash flow management in the current business, challenges with profitability, and probability of disruption—that is, a nudge demonstrating challenges. This is consistent with prior studies that have suggested that when faced with even a minor business disruption, BOP entrepreneurs have very limited abilities to recover, and often, must resort to borrowing money even for immediate business operations (Iyengar et al., 2021). These nudges would therefore, help shape the decision-maker's final proclivity toward lending (or not lending) in response to the SRI's request. This leads to our next three hypotheses.

H4. A loan request's intent (i.e., whether it is an expansion loan) moderates the relationship between a borrower's status as a repeat borrower and the extent to which their loan request gets funded (i.e., "Funded Ratio").

H5. A loan request's intent (i.e., whether it is an expansion loan) moderates the relationship between a borrower's status as a repeat borrower and the amount that each contributing lender contributes to their loan request (i.e., "Loan per Lender").

H6. A loan request's intent (i.e., whether it is an expansion loan) moderates the relationship between a borrower's status as a repeat borrower and the number of lenders who funded their loan request.

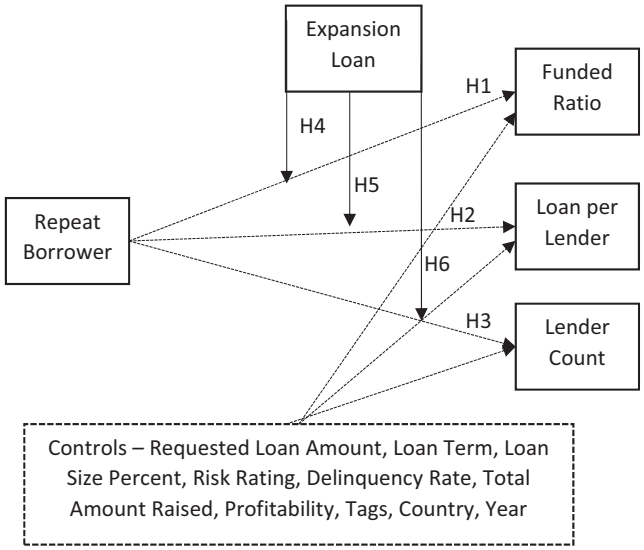

FIGURE 1 Overall research model.

The overall research model is described in Figure 1. In this figure, the hypothesized relationships are represented by solid arrows, while controls (described in the next section) are represented by dotted arrows.

STUDY DESIGN AND DATA COLLECTION

This study was conducted using data from the website of one of the largest crowdfunded microfinance exchanges in the world—that is, Kiva.org (*Kiva*). Kiva is an international nonprofit organization, which crowdfunds loans to expand financial access and help underserved communities thrive (Dorfleitner et al., 2021). It has thus far facilitated over $1.1 Billion in loans (Anglin et al., 2020). Like other crowdfunding platforms (e.g., Kickstarter), Kiva also does not get involved with project management or project outcome evaluation, and neither does it assume an information brokerage role by providing ratings of a project initiator's past activities or their past project's outcomes (Anglin et al., 2020; Steigenberger & Wilhelm, 2018). Instead, it merely serves as a platform to connect microborrowers and crowdfunders. The average loan size that is posted on Kiva is approximately $415, and crowdfunders may contribute as little as $25 toward a funding request (Jancenelle et al., 2018). A typical loan would, therefore, be simultaneously funded by several crowdfunders from all around the world (Anglin et al., 2020).

Allison et al. (2013) and Dorfleitner et al. (2021) provide detailed overviews of the way in which a Kiva loan is

executed. There are essentially three participants in each loan transaction—a *borrower*, a *field partner/MFI*, and *crowdfunders*. A borrower who wishes to obtain a loan for a project typically approaches a Kiva field partner (usually an MFI) with a loan request. If the request is approved, the field partner disburses the loan upfront. Subsequently, the field partner creates a crowdfunding request page on Kiva. While the partner can indeed select which loan requests it accepts, it is not allowed to selectively post crowdfunding requests on Kiva; instead, it must post *all* requests where it has loaned money (Jenq et al., 2015). This funding page should contain information about the project, the borrower, their geographic location, and other relevant details. The field partner ensures strict compliance with Kiva's standards regarding honesty and accuracy of reported data, including the loan amount that is being requested (Steigenberger & Wilhelm, 2018). After the page is created and prior to it going "live," a team of volunteer "taggers" (taggers are independent of borrowers, field partners, and lenders) reviews each posting and assigns tags to loans (up to five tags are allowed per tagger per loan). Assigning a tag allows lenders to more easily search for borrowers and/loan requests that meet their preferences. For example, a lender may be interested in "women empowerment" on Kiva and click on the "women empowerment" tag, at which time all loan requests that are tagged as being related to women empowerment will be seen by them. Kiva defines certain criteria that need to be closely followed for a volunteer to tag a loan as belonging to a category, and only certain preapproved tags can be applied to any loan request. Subsequent to the tagging process, a loan goes "live" which means it is available on the Kiva webpage for lenders to see.

After the page is made "live," it is typically kept live for 30 days. Individuals (i.e., crowdfunders) from all around the world can view loan request pages, search for loan requests based on certain key words and characteristics, decide if/whom they wish to lend to, and then make individual microloans. These crowdfunders can lend any amount of money less than or equal to the full loan amount, subject to a minimum amount of US$ 25. Effectively therefore, the crowdfunders are "buying out" slices of the original loan from the field partner. As they make this cash transfer, the field partner collects the amount raised, essentially recovering the money that it had previously loaned to the original borrower. At this point, the loan's risk effectively gets transferred to the crowdfunders who funded the small dollar amounts. The field partner is responsible for collecting repayments from the borrower and posting them back to the crowdfunders. As mentioned before, crowdfunders receive no interest and only expect to be repaid their principal (i.e., they lend purely from a nonfinancial motive).

This means that from the field partner's point of view, the higher the percent of the loan that gets funded by the crowdfunders, the lower is their capital outlay, exposure, and risk through the life of the loan. In case a campaign is highly successful (i.e., if it reaches its *entire* fundraising goal which typically is the total amount that the field partner had loaned out to the borrower), the field partner will have *no* subsequent capital risk and will in effect, receive interest payments from the borrower for free whereas all the risk will be held by the crowdfunders. This entire process is represented in Figure 2. In terms of operational preferences therefore, the higher the percent of the initial loan disbursal that the field partner (MFI) can recover from the crowdfunders, the better it is for them in terms of cash and risk management. This is the predominant model in most crowdfunded microfinance platforms (Anglin et al., 2020).

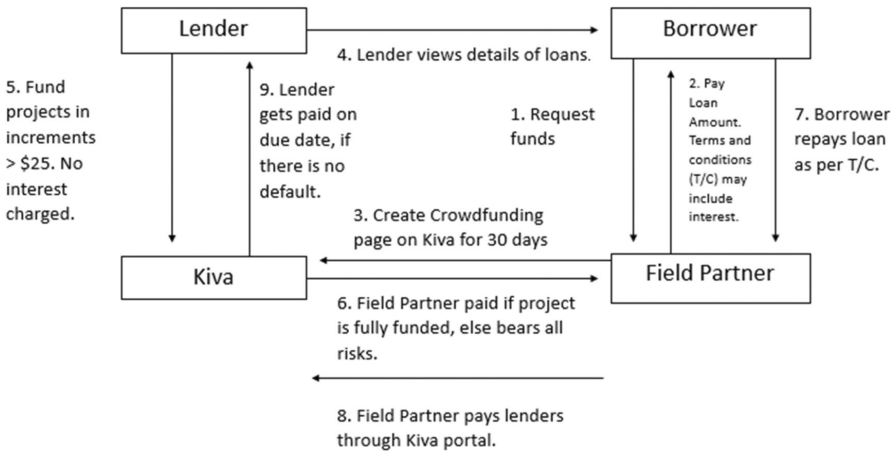
Lender
Borrower
4. Lender views details of loans.
5. Fund projects in increments > $25. No interest charged.
9. Lender gets paid on due date, if there is no default.
1. Request funds
2. Pay Loan Amount. Terms and conditions (T/C) may include interest.
7. Borrower repays loan as per T/C.
3. Create Crowdfunding page on Kiva for 30 days
Kiva
Field Partner
6. Field Partner paid if project is fully funded, else bears all risks.
8. Field Partner pays lenders through Kiva portal.

FIGURE 2 Kiva lending process.

Data collection and constructs

Kiva data are made available through the related website Kivatools.com, which periodically scrapes data from the Kiva website and makes it available to researchers. While there has heretofore been limited use of these data in LSCM scholarship, it has been used in other allied fields such as entrepreneurship and business ethics (e.g., Anglin et al., 2020; Dorfleitner et al., 2021; Moss et al., 2015). The Kiva website underwent a major redesign in the beginning of 2016. Therefore, consistent with prior research (e.g., Anglin et al., 2020), we deemed it better to only use data from that year onwards. In addition, data collection had to be truncated at the end of 2019 since that was the last prepandemic year and the remaining data may be contaminated with COVID-19-related issues. We therefore used all available data for the 2016–2019 timeframe (i.e., 4 calendar years). Consistent with Berns et al. (2020), in this dataset also, the items of interest include detailed information on the borrowers, their respective projects for which they requested borrowing, the field partner intermediaries with which they partnered, and the countries in which the borrower and project was located.

Dependent variables

As can be seen in Figure 2, there are three dependent variables—*Funded Ratio, Loan per Lender, and Lender Count*—and one moderator—*Expansion Loan* in this study.

Funded Ratio is measured as the percent of the original fundraising request that gets filled by the crowdfunders. We contend that it is important to investigate this variable as a continuous outcome (i.e., the *percentage* of the original funding request that gets crowdfunded) since although partial funding of the request may not totally absolve the field partner of risk, it will still reduce it compared with no funding. Also, higher values on this metric imply increased likelihood of a funding request being able to reach the eventual goal of being 100% crowdfunded. Therefore, we measure *Funded Ratio* as the percentage of the loan request that is funded. For example, if the loan requested is \$100, and \$60 is the amount funded, then the *funded ratio* is (60/100) * 100 = 60%. *Funded ratio* is therefore measured on a continuous scale and ranges between 0 (i.e., no funding received) and 100 (i.e., fully funded).

Loan per Lender is measured as the average amount raised from each crowdfunder during the time that the crowdfunding page is live on Kiva. For example, if the total amount raised was \$60 and there were 2 crowdfunders, then the *loan per lender* would be \$60/2 = \$30. Note that this is a continuous measure with a lower bound of 25 (because the minimum that any crowdfunder is allowed to contribute is \$25).

Lender Count is measured as the number of lenders who funded a borrower for a particular loan request. It is therefore measured on a continuous scale as a non-negative integer.

Independent and moderator variables

Repeat Borrower status—which is our main independent variable—refers to whether the borrower is a repeat or a first-time borrower on Kiva. This status is measured based on whether the borrower is *tagged* as a *Repeat Borrower* on their loan page. Every loan on Kiva can be "tagged" as having certain characteristics. These characteristics may be related to the project (e.g., sustainability), intended use (e.g., animals[1]), or borrower (e.g., female; Kiva, 2021). The tagging process is managed through a volunteer team (independent of borrower and lender) that systematically reviews all the loans posted to the website. This team assigns the tags, and up to five tags are allowed per tagger per loan. Assigning a tag allows lenders to more easily search for borrowers and/loan requests that meet their preferences. For example, a lender may be able to search for "animals" on Kiva and all loan requests that are tagged as being related to animals, will be seen by them. Kiva defines certain criteria that need to be closely followed for a volunteer to tag a loan as belonging to a category. Specifically, a "Repeat Borrower" tag means that the borrower has previously borrowed either from Kiva or from the field partner. It is therefore measured as a binary variable in our dataset (i.e., Yes = 1, No = 0).

Expansion Loan status—that is, our moderator—is measured through a content analysis of the write-up on the crowdfunding page of the loan. We adopt this route to measure this variable since Kiva does not have a specific tag related to whether the loan is an expansion loan. However, recall that the crowdfunding page is created by the field partner and Kiva insists on certain standards of data from its field partners (Steigenberger & Wilhelm, 2018). On the crowdfunding page, the field partner is supposed to provide a verbal description of the nature of the project and for what the funds will be used. We independently looked through these verbal descriptions, searching for the following words—"expand" "expansion" "grow" "enhance" "increase" and "improve."

[1]Purchasing cattle, for example, would be a reason for a loan to be tagged with "animals."

After narrowing down to the loans which contained these words, we manually examined each verbal descriptor to highlight loans that were truly seeking to expand an existing business resulting in a binary dummy variable (i.e., Expansion = 1, Non-Expansion = 0). See Appendix 1, for example, of expansion and nonexpansion loans.

Control variables

In addition to the hypothesized variables, we also included various control variables. These involve controls specific to the SRI's loan request, the field partner, and the country in which the borrower resides.

Requested Loan Amount—This is the amount of loan originally requested, measured in US$. Requested loan amount is measured on a continuous scale and is a non-negative number.

Loan Term—This is the number of months over which the loan is supposed to be repaid. It is measured on a continuous scale and is a non-negative number.

Loan Size Percent—This is the average field partner loan size, expressed as a percentage of the country's gross annual national income per capita. Loan size percentage is measured on a percentage basis and is a continuous positive variable that starts from 0.

Tags—Tags is the total number of tags associated with the loan request. As we have discussed before, loan requests can be tagged with various labels such as #Parent and #Schooling to help lenders find loans that match their areas of interest. A larger number of tags raises the visibility of the loan request since it will show up in more search results. Therefore, one would expect that loans with a higher number of tags may be upward biased in terms of their likelihood of being seen by the crowdfunders and therefore of getting successfully funded.

Risk Rating—The partner's risk rating is measured on a scale of 0–10. There are therefore 11 different levels of partner risk, with 10 being the least risky and 0 being the riskiest. Higher partner risk ratings indicate lower institutional default risk from the field partner. More importantly, however, higher partner risk ratings indicate that the field partner may be working with more risky customers, while lower partner risk ratings indicate the opposite (Anglin et al., 2020). Since this may influence a crowdfunder's willingness to lend, we control for it.

Delinquency Rate—The field partner's delinquency rate is the ratio of payments that are past due, divided by the remaining principal amount of loans being repaid. Delinquency rate is measured on a percentage basis and ranges from 0 to 100. Lower delinquency rates imply greater ability of the field partner to ensure loan repayment on time. In addition, like the Risk Rating variable discussed above, low Delinquency Rate indicates that the field partner works with more risky borrowers.

Total amount raised—This is the total amount of loans raised by the field partner through the Kiva website, measured in US$. It is measured on a continuous scale.

Profitability—The partner's profitability is captured by return on assets (ROA), which is measured on a percentage basis. ROA is an indicator of the long-term sustainability of the field partner since partners consistently making profits are more likely to be able to sustain operations.

Year Dummy—We use a vector of dummy variables to control for the year (4 years) in which the loan request was made.

Country Dummy—We use a vector of 83 country dummy variables to control for the country in which the borrower's business is located.

DATA ANALYSIS AND RESULTS

We collected data for crowdfunding listings on the Kiva website for a 4-year timeframe beginning in 2016 and ending in 2019. This resulted in a total of 462,659 observations. After eliminating observations with missing or incomplete data, we were left with 415,434 observations. We then selected observations to be included in our analysis based on two related filters. First, we categorized the observations based on the self-declared business sector which is reported on the Kiva website. Because our focus is on SRIs at the BOP, we focus on those whose self-declared business sector is "retail." All observations falling into this category were manually combed to ensure they were indeed correctly categorized. This gave us the first set of observations that would be included in our sample. We then supplemented this list by also manually parsing through the verbal description of the reason for the loan request for all the loan requests that *did not* pass the first filter—that is, their self-declared business sector was something other than retail as per Kiva. Because several loan requests that would meet our requirement of being an SRI may not be classified under the "retail" category by Kiva, this is an important step to ensure the completeness of our sample (see, e.g., Appendix 2). Through this process, we added additional requests that *were* for the purposes of setting up or operating retail businesses but were not categorized as such in the Kiva system. The finalized dataset, therefore, now consisted of all the SRIs that engaged in crowdfunding through Kiva in 2016–2019.

After applying the above-mentioned filters, our final sample had 80,934 observations. This works out to approximately 17.5% of the 462,659 observations that we started out with. This is remarkably close to the general range

of the GDP contributed by the retail sector as a function of the overall GDP in emerging economies (i.e., approximately 12% to 18%—c.f., Kearney, 2021). The descriptive statistics are presented in Table 1, while the correlation matrix is presented in Table 2.

Three separate models are built and analyzed in this study. The dependent variable in the first set of hypotheses (H1 and H4) *Funded Ratio* is in the nature of a fraction, which can take any value between and including 0 and 1. Correspondingly, a fractional response model is adopted with a logit link function for the conditional mean of *Funded Ratio*, thereby ensuring that the conditional mean lies between 0 and 1. The model is fit via a quasi-likelihood estimation method using a Bernoulli log-likelihood function (see Papke & Wooldridge, 1996 for a description of this model). The regression model is as follows:

$$E(y_i|\boldsymbol{x_i}) = \frac{\exp(\beta_0 + \beta_1 x_1 + \ \ldots \ + \beta_N x_N)}{1 + \exp(\beta_0 + \beta_1 x_1 + \ \ldots \ + \beta_N x_N)} \quad (1)$$

where x_i are explanatory variables and β_i are coefficients.

The dependent variable in the second set of hypotheses (H2 and H5) *Loan per Lender* is in the nature of a continuous variable, which can take any positive value. Correspondingly, an ordinary least squares (OLS) regression model is adopted. The regression model is as follows:

$$E(y_i|\boldsymbol{x_i}) = \beta_0 + \beta_1 x_1 + \ \ldots \ + \beta_N x_N \quad (2)$$

The dependent variable in the third set of hypotheses *Lender Count* is count data, that is, data which can only take on non-negative integer values such as 0, 1, and 2. Correspondingly, a negative binomial regression model is adopted, which allows for overdispersion in count outcome variables (i.e., situations where the conditional variance exceeds the conditional mean). This framework is a generalization of the Poisson regression model, which does not allow for overdispersion of the outcome variable. The model is fit via maximum likelihood estimation. The negative binomial regression model is as follows:

$$\widetilde{\mu}_i = \exp(\beta_0 + \beta_1 x_1 + \ \ldots \ + \beta_N x_N)\exp(\epsilon_i) \quad (3)$$

where $\widetilde{\mu}_i$ is the mean *Lender Count* for observation *i*, and ϵ_i is the error term for firm *i*, where ϵ_i is assumed to have a gamma distribution.

As H4, H5, and H6 propose that a loan request's intent (i.e., whether it is an expansion loan) will moderate the direct effects proposed in H1, H2, and H3, respectively, hierarchical multiple regression is recommended (Goldsby et al., 2013). Aguinis and Gottfredson (2010) provide a testing methodology involving sequentially tested models. The first model is a controls-only model in which the dependent variable is a function of all the control variables. Subsequently, one must add to this first model by incorporating all the first-order paths. Finally, one must build a third model in which interaction variables are added to the second model, where interactions are modeled as the product of their first-order variables. The statistical significance of these interaction variables would indicate moderation in the overall model. We tested our hypotheses by following this recommended approach (see Table 3). Since the hypothesized independent variable, that is, *Repeat Borrower* and the hypothesized moderator, that is, *Expansion Loan* are both dichotomous, that is, dummy variables, they were not centered prior to interacting them.

Explanatory validity tests

For the dependent variable *Funded Ratio*, all three models (Models 1 through 3 in Table 3) have statistically significant Chi-squared statistics ($p < .01$ in all three cases) indicating overall significance for all three models. Further, Likelihood ratio tests show statistically significant improvement in model fit as the hypothesized first-order variables ($p < .01$) are sequentially added; however, no such improvement is detected when the interaction term ($p > .10$) is sequentially added. Based on these results, we can conclude that Model 2 is indeed the most appropriate model to explain *Funded Ratio*.

Similarly, for the dependent variable *Loan per Lender*, all three models (Models 4 through 6 in Table 3) have statistically significant chi-squared statistics ($p < .01$ in all three cases) indicating overall significance for all three models. Further, Wald tests show statistically significant improvement in model fit as the hypothesized first-order variables ($p < .01$) and the interaction term ($p < .01$) are sequentially added. Based on these results, we can conclude that Model 6 is indeed the most appropriate model to explain *Loan per Lender*.

Finally, for the dependent variable *Lender Count*, all three models (Models 7 through 9 in Table 3) have statistically significant Chi-squared statistics ($p < .01$ in all three cases) indicating overall significance for all three models. Further, likelihood ratio tests show statistically significant improvement in model fit as the hypothesized first-order variables ($p < .01$) are sequentially added; however, no such improvement is detected when the interaction term ($p > .01$) is sequentially added. Based on these results, we can conclude that Model 8 is the most appropriate model to explain *Funded Ratio*.

TABLE 1 Operationalization of variables and descriptive statistics.

Name	Description of operationalization	Measure	Label	Sample values		
				No of obs	Mean	SD
Funded ratio	Percentage of the loan request that gets funded	Percentage	Fun	80,934	0.95	0.18
Lender count	Number of lenders that lend to a loan request	Continuous	Len	80,934	14.41	16.57
Loan per lender	The amount of loan given per lender (in USD)	Continuous	Lpl	80,934	104.26	414.86
Repeat borrower	Whether the borrower has borrowed through the Kiva platform before (1 if yes, 0 if no)	Binary dummy	Rep	80,934	0.22	0.42
Expansion loan	Whether the loan request is for expanding the borrower's business (1 if yes, 0 if no)	Binary dummy	Exp	80,934	0.25	0.43
Loan amount	The amount of loan requested by the borrower (in USD)	Continuous	Amt	80,934	719.33	1038.53
Loan term	The number of months over which the loan is to be repaid	Continuous	Term	80,934	11.02	4.62
Loan size percent	Average field partner loan size as a percentage of the country's gross annual national income per capita	Percentage	Pc	80,934	20.13	31.40
Risk rating	Field partner's risk rating (0 most risky to 10 least risky)	Integer	Risk	80,934	6.88	2.21
Delinquency rate	Field partner's ratio of payments that are past due, divided by the remaining principal amount of loans being repaid	Percentage	Del	80,934	16.40	23.31
Total amount raised	Total amount of loans raised by the field partner through the Kiva website (in USD million)	Continuous	Tot	80,934	32.50	30.00
Profitability	Field partner's return on assets	Percentage	Prof	80,934	4.91	6.21
Tags	The total number of tags associated with a loan request	Continuous	Tag	80,934	2.11	1.80

TABLE 2 Correlation coefficients.[a]

	Fun	Len	Lpl	Rep	Exp	Amt	Term	Pc	Risk	Del	Tot	Prof	Tag
Fun	1.00												
Len	0.06*	1.00											
Lpl	−0.06*	−0.11*	1.00										
Rep	−0.05*	0.14*	−0.03*	1.00									
Exp	−0.05*	0.02*	−0.04*	0.01*	1.00								
Amt	−0.13*	0.61*	0.40*	0.08*	−0.01*	1.00							
Term	−0.32*	0.19**	−0.08*	0.06*	0.06*	0.03*	1.00						
Pc	−0.13*	0.12*	−0.04*	−0.001	0.17*	0.07*	0.24*	1.00					
Risk	0.09*	−0.19*	0.05*	−0.09*	−0.15*	−0.07*	−0.09*	−0.16*	1.00				
Del	−0.02*	−0.02*	0.03*	0.10*	0.17*	−0.01*	−0.07*	−0.04*	−0.30*	1.00			
Tot	0.15*	−0.26*	0.09*	−0.05*	−0.21*	−0.09*	−0.33*	−0.31*	0.76*	−0.14*	1.00		
Prof	0.14*	−0.24*	0.01*	−0.15*	0.002	−0.21*	−0.16*	−0.11*	0.59*	−0.23*	0.48*	1.00	
Tag	−0.09*	0.49*	−0.11*	0.38*	0.04*	0.26*	0.32*	0.11*	−0.20*	0.04*	−0.27*	−0.19*	1.00

[a]Note that * indicates $p < .05$.

Hypotheses test results

The results in Table 3 (Model 2) show that the coefficient of the variable *Repeat Borrower* is negative and significant ($\beta = -.30, p < .01$). This provides support for H1 and therefore suggests that there is a negative relationship between a borrower's status as a repeat borrower and the *Funded Ratio* (i.e., extent to which their loan request gets funded). Similarly, the results in Table 3 (Model 6) show that the coefficient of the variable *Repeat Borrower* is negative and significant ($\beta = -14.41, p < .01$). This provides support for H2 and therefore suggests that there is a negative relationship between a borrower's status as a repeat borrower and *Loan per Lender* (i.e., the amount that each contributing crowdfunder lender contributes to their loan request). Finally, the results in Table 3 (Model 8) show that the coefficient of the variable *Repeat Borrower* is positive and significant ($\beta = .07, p < .01$). This provides support for H3 and therefore suggests there is a positive relationship between a borrower's status as a repeat borrower and the *Lender Count* (i.e., number of lenders that choose to lend in response to their funding request).

The explanatory validity tests indicated that Model 2 is the most appropriate model to explain *Funded Ratio*. Given that Model 3 was rejected in favor of Model 2, we conclude that there is no evidence of moderation by a loan request's intent (i.e., whether it is an expansion loan) of the relationship between a borrower's status as a repeat borrower and the extent to which their loan request gets funded (i.e., *Funded Ratio*). Therefore, there is no support for H4.

The explanatory validity tests indicated that Model 6 is the most appropriate model to explain *Loan per Lender*. A look at the results for moderation of the relationship between *Repeat Borrower* status and *Loan per Lender* by *Expansion Loan* shows that the coefficient of the interaction term between *Repeat Borrower* and *Expansion Loan* is positive and significant ($\beta = 19.36, p < .01$), thereby providing support for H5. This result is consistent with a moderating effect, that is, a weakening effect of *Expansion Loan* on the relationship between *Repeat Borrower* status and *Loan per Lender*. This indicates that the negative effect of *Repeat Borrower* status on *Loan per Lender* is weakened (i.e., goes from negative to positive), going from −14.41 to 4.95, when the loan is an expansion loan (see Figure 3). This implies that on average, repeat borrowers who do not have expansion loans get less loans per lender (94.79 USD) than nonrepeat borrowers (109.20 USD); whereas repeat borrowers who do not have expansion loans get less loans per lender (102.86 USD) than nonrepeat borrowers (97.92 USD).

Further, the explanatory validity tests indicated that Model 8 is the most appropriate model to explain *Lender Count*. Given that Model 9 was rejected in favor of Model 8, we conclude that there is no evidence of moderation

TABLE 3 Regression results.[a]

	Parameter estimates					
	Dependent variable: Funded ratio (1)					
	Model 1 (controls only)		Model 2 (controls + X + W)		Model 3 (controls + X + W + XW)	
Variables	***b***	***p***	***b***	***p***	***b***	***p***
Hypothesized variables						
Repeat borrower (RB)	–	–	−0.30***	.00	−0.26***	.00
Expansion loan (EL)	–	–	0.07	.05	0.12***	.01
RB × EL	–	–	–	–	−0.14	.05
Controls						
Loan amount	−0.001***	.00	−0.001***	.00	0.00***	.00
Loan term	−0.18***	.00	−0.18***	.00	−0.18***	.00
Loan size percent	−0.005***	.00	−0.004***	.00	−0.004***	.00
Risk rating	0.12***	.00	0.12***	.00	0.12***	.00
Delinquency rate	0.001**	.05	0.002***	.00	0.003***	.00
Total amount raised	0.01***	.00	0.01***	.00	0.01***	.00
Profitability	0.01***	.00	0.01***	.00	0.01***	.00
Tags	0.09***	.00	0.11***	.00	0.11***	.00
Constant	5.08***	.00	4.94***	.00	4.91***	.00
Country Dummies	Yes		Yes		Yes	
Year Dummies	Yes		Yes		Yes	
Chi^2 (df)	520000.00 (75)		519938.84 (77)		400000.00 (78)	
p value	.00		.00		.00	
Pseudo R^2	.26		.26		.26	
Log Pseudo likelihood	−11414.872		−11391.58		−11390.268	
Test for improvements in model fit						
LR test statistic (df)	–		46.58 (2)		2.62 (1)	
p value	–		<.01		>.10	

	Parameter estimates											
	Dependent variable: Loan per lender						Dependent variable: Lender count					
	Model 4 (Controls only)		Model 5 (Controls + X + W)		Model 6 (Controls + X + W + XW)		Model 7 (Controls only)		Model 8 (Controls + X + W)		Model 9 (Controls + X + W + XW)	
Variables	***b***	***p***	***b***	***p***	***b***	***p***	***b***	***p***	***b***	***p***	***b***	***p***
Hypothesized variables												
Repeat borrower (RB)	–	–	−9.82***	.00	−14.41***	.00	–	–	0.07***	.00	0.07***	.00
Expansion loan (EL)	–	–	−6.44***	.00	−11.28***	.00	–	–	0.02***	.01	0.02***	.00
RB × EL	–	–	–	–	19.36***	.01	–	–	–	–	−0.02	.22
Loan amount	0.26	.09	0.26	.09	0.26	.09	0.0004***	.00	0.0004***	.00	0.0004***	.00
Loan term	−0.37	.81	−0.36	.82	−0.39	.80	0.04***	.00	0.04***	.00	0.04***	.00
Loan size percent	−0.16	.27	−0.16	.27	−0.17	.25	0.001***	.00	0.001***	.00	0.001***	.00
Risk rating	−10.88***	.00	−10.93***	.00	−10.88***	.00	−0.07***	.00	−0.07***	.00	−0.07***	.00
Delinquency rate	0.32	.16	0.35	.11	0.33	.14	−0.001***	.00	−0.001***	.00	−0.001***	.00

TABLE 3 (Continued)

	Parameter estimates											
	Dependent variable: Loan per lender						Dependent variable: Lender count					
	Model 4 (Controls only)		Model 5 (Controls + X + W)		Model 6 (Controls + X + W + XW)		Model 7 (Controls only)		Model 8 (Controls + X + W)		Model 9 (Controls + X + W + XW)	
Variables	***b***	***p***	***b***	***p***	***b***	***p***	***b***	***p***	***b***	***p***	***b***	***p***
Total amount raised	1.54***	.00	1.56***	.00	1.54***	.00	−0.004***	.00	−0.004***	.00	−0.004***	.00
Profitability	1.28	.14	1.27	.14	1.27	.14	0.004***	.00	0.004***	.00	0.004***	.00
Tags	−42.94***	.00	−42.01***	.00	−41.98***	.00	0.13***	.00	0.13***	.00	0.13***	.00
Constant	−59.00	1.00	−59.63	1.00	16.46	.76	2.077***	.00	2.10***	.00	2.10***	.00
Country Dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Year Dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Chi^2 (df)	–		–		–		74280.80 (75)		74412.46 (77)		74413.93 (78)	
p value	–		–		–		0.00		0.00		0.00	
Pseudo R^2	–		–		–		.12		.12		.12	
Log likelihood	–		–		–		−262117.5		−262051.67		−262050.94	
F	176.27		189.37		1253.11		–		–		–	
p value	.00		.00		.00		–		–		–	
R^2	.29		.29		.29		–		–		–	
Test for improvements in model fit												
LR test statistic (df)	–		–		–		–		131.66 (2)		1.46 (1)	
p value	–		–		–		–		<.01		>.10	
F	–		6.70		7.19		–		–		–	
p value	–		.00		.01		–		–		–	

[a]Note that ***$p < .01$.

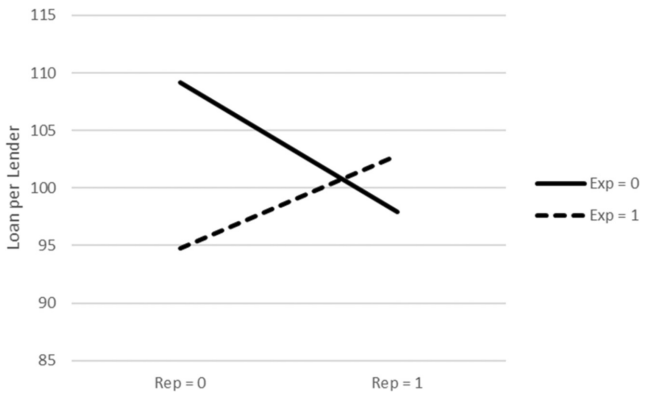

FIGURE 3 Moderating effect of expansion loan on repeat borrower–loan per lender relationship.

by a loan request's intent (i.e., whether it is an expansion loan) of the relationship between a borrower's status as a repeat borrower and the number of lenders they need to solicit to fulfill their loan request (i.e., *Lender Count*). Therefore, there is no support for H6.

Taken together, the results suggest that borrower intent (i.e., whether the loan sought is an expansion loan) partially moderates the relationship between borrower characteristic (i.e., whether the borrower is a repeat borrower) and lending outcomes (i.e., the number of lenders that funded a borrower for a particular loan request). The hypotheses test results are summarized in Table 4.

DISCUSSION, IMPLICATIONS, AND CONCLUSION

In the past few years, LSCM scholars have realized the important role that they can play in driving meaningful societal change through scholarship (e.g., Esper et al., 2020; Rao et al., 2019). Indeed, Fawcett and Waller (2015, p. 1) argue that the role of scholarship has been to "advance knowledge and understanding for *the benefit of society*." A similar idea has also been discussed by the current editors of the *Journal of Business*

TABLE 4 Summary of hypotheses test results.

Hyp. No.	Hypothesis	Supported/not supported
1	There is a negative relationship between a borrower's status as a repeat borrower and the extent to which their loan request gets funded	Supported
2	There is a negative relationship between a borrower's status as a repeat borrower and the amount that each contributing crowdfunder contributes to their loan request	Supported
3	There is a positive relationship between a borrower's status as a repeat borrower and the number of lenders (i.e., crowdfunders) who funded their loan request (i.e., Lender Count). Borrower Intent	Supported
4	A loan request's intent (i.e., whether it is an expansion loan) moderates the relationship between a borrower's status as a repeat borrower and the lender count extent to which their loan request gets funded	Not Supported
5	A loan request's intent (i.e., whether it is an expansion loan) moderates the relationship between a borrower's status as a repeat borrower and the amount that each contributing lender contributes to their loan request	Supported
6	A loan request's intent (i.e., whether it is an expansion loan) moderates the relationship between a borrower's status as a repeat borrower and the number of lenders who funded their loan request.	Not Supported

Logistics, who in a recent editorial, tried to inspire the LSCM scholarly community to study "logistics for a better world" (Davis-Sramek & Richey, 2022). Our discipline, therefore, now recognizes that LSCM research needs to look beyond the traditional notions of developed world/big box store issues, and instead also devote attention to issues that emerge in nontraditional/BOP markets, that may promise the opportunity of creating a better life through LSCM. Researchers contend that such work can not only enhance social sustainability, but it can also make economic sense (Mahapatra et al., 2019; Nilakantan et al., 2019; Rao et al., 2019). It is from this philosophy that our work is inspired.

Specifically, as we have argued previously, the BOP supply chain is highly dependent on SRIs and microentrepreneurship to develop a viable route to market for larger upstream corporations (Duarte et al., 2019; Gold et al., 2020; Sodhi & Tang, 2016; Zomorrodi et al., 2019). As Iyengar et al. (2021) point out, "given the critical role these last-mile enterprises play in helping large global corporations access the BOP, their collapse is likely to create bottlenecks in the last-mile distribution channels for both their upstream supply chain partners and their downstream customers." In other words, small-scale last-mile entrepreneurship through SRIs and LSCM are intricately connected in the BOP (e.g., Iyengar et al., 2021; Pullman et al., 2018; Sodhi & Tang, 2016). Because access to finance is one of the leading drivers of entrepreneurship and economic development (Klapper et al., 2016; Nilakantan et al., 2019; Nordin et al., 2019), understanding the dynamics of access to finance, as faced by these SRIs, is therefore, a very important part of understanding the supply chains that exist at the BOP.

Implications for practice

The microfinance industry in general continues to face challenges in being financially viable (Daher & Le Saout, 2013). While exact estimates vary, the general belief is that only about 50% percent of MFIs are financially self-sustaining (Cull et al., 2016). There are several reasons for this but tightening rates of repayment have often been blamed—for example, by one estimate there are over 10 million microloan defaulters in India alone (Haldar & Stiglitz, 2016). In response, several MFIs have now changed their operational model in terms of how they manage cash flows. Rather than bearing all the credit risk themselves, they now try to outsource the credit risk by quickly crowdsourcing the loaned money through third-party crowdfunding websites such as Kiva (Dorfleitner et al., 2020; Marom, 2013). This results in risk reduction while ensuring enhanced profitability. Researchers argue that this latter model is likely to be the predominant operational form that microfinance takes in the coming years (Anglin et al., 2020; Assadi et al., 2018; Attuel-Mendes, 2016). Probably because of these reasons, some have even gone so far as to call crowdfunding "the new hope" for the microfinance sector (Luo et al., 2022, p. 373).

It is, however, not hard to see that this new operational model creates an interesting conundrum. Specifically, the MFI oversees the original sanctioning/approving of the loan, the proceeds of which they will then collect from the crowdfunding community. Therefore, the MFI obviously is likely to favor funding requests where it *knows* that it has a higher chance of recovering the loan proceeds from crowdfunding. Effectively, this creates an adverse selection situation wherein the MFI may be tempted to deny

loan requests from the kinds of potential borrowers who it realizes may have limited success in receiving high levels of crowdfunding support when the time comes. Our study indicated that repeat borrowers fall precisely into this category. This means that a repeat borrower may face challenges in successfully raising funding for such a venture under the current crowdfunded format.

At the same time, however, business disruptions are exceedingly common in SRIs at the BOP. For example, Iyengar et al. (2021) demonstrated that over 60% of surveyed BOP entrepreneurs reported having had at least one major disruption in the past 2 years. Further, few such entrepreneurs report the ability to bounce back from disruptions (Heltberg & Lund, 2009). Even for the ones that do demonstrate this ability, said ability does not appear to be materially influenced by their access to an MFI (Iyengar et al., 2021). In other words, access to an MFI contributes precious little to entrepreneurial resilience at the BOP. We contend that our study indicates *why* this is the case and what can be done about it. Probably because of this reason, prominent LSCM scholars have encouraged research on this exact topic by urging investigators to study "what is the mechanism (screening, monitoring, auditing) that can sustain Kiva's success so that more people will continue to lend, and more poor people can continue to receive loans" (Lee & Tang, 2018, p. 992).

Specifically, what our study demonstrates is that qualities that may be deemed "helpful" or "good" in traditional markets (such as having a borrowing history) may inadvertently have the *opposite* effect at the BOP. For example, in traditional markets, repeat borrowing may be seen as evidence of creditworthiness and financial strength. On the contrary, however, in the context of crowdfunded prosocial lending, this status appears to backfire since crowdfunders appear to prefer first-time borrowers. Arguably therefore, the MFI is likely to do the same. This may explain why entrepreneurial resilience is so hard to maintain at the BOP and why financial inclusion has little effect in enhancing it (Iyengar et al., 2021; Shetty, 2013). More generally, this finding is consistent with Fawcett and Waller (2015, p. 235), who argue that "operating at the bottom of the pyramid is different from doing business in wealthy and emerging markets." As we have seen, the BOP is indeed different and recognition is needed that things that may work a certain way elsewhere may need to be handled differently at the BOP (c.f., Pitta et al., 2008).

This finding also generates actionable insights—both in terms of the short and long term. Recall that the tagging process on Kiva (and several other crowdfunding websites) is managed by a network of volunteers who study each loan request and tag it based on various characteristics. A simple short-term solution at the current time may be to reconsider the value in tagging repeat borrowers, since said tagging seems to be deleterious rather than helpful. A more and extensive action may be to evaluate the value of various tags and identify those that *indeed benefit* the borrower, as opposed to those that despite the best intentions, may inadvertently be hurting them. In the longer term, such crowdfunded platforms may need to reconsider the value of tagging and reevaluate who is the intended beneficiary of such tagging—effectively reassessing the value of nudges to examine which nudges are truly helpful and which are not. Another actionable insight is that given how challenging it is for SRIs to raise funding for their ventures through such funding platforms, if the larger upstream corporations should consider partnering with them and open lending channels, thereby ameliorating the need for crowdfunded microfinance in the first place (c.f., Sodhi and Knuckles, 2021; Tang, 2022).

Implications for theory

We grounded our hypotheses based on precepts from Nudge theory. This theory originates at the intersection of information and behavioral economics and seeks to understand how the presentation of information has the potential to influence (i.e., "nudge") behavior (Arno & Thomas, 2016; Debnath & Bardhan, 2020). Nudges are ubiquitous in daily life, whether one realizes it or not. Indeed, in 2010, the British Behavioural Insights Team (BIT), also known as the "Nudge Unit," was established to improve regulatory design and ensure compliance with new regulations (Cai et al., 2016; Thaler, 2018). Similarly, in Australia, the government of New South Wales (NSW) established a Behavioural Insights community of practice in 2012 and has successfully applied the principles from Nudge theory to get people to pay taxes and fines on time (Easton, 2014). Even in the private sector, leading organizations such as Google have been applying Nudge theory in its various forms to increase productivity and happiness of employees (Ebert & Freibichler, 2017).

Despite all this excitement in the application of Nudge theory, its use in mainstream LSCM research remains limited (Dhanorkar & Siemsen, 2021). A keyword search of three of the leading journals in our field (*Journal of Business Logistics*, *Journal of Supply Chain Management*, and *Journal of Operations Management*) revealed no papers that have currently grounded their work on this theory. This dearth of studying nudges in LSCM scholarship is counter to the importance that recent editorials place on the topic (Donohue et al., 2020). It is our contention that one of the theoretical contributions of our paper is bringing this theoretical dimension into the LSCM literature and demonstrating its applicability in studying questions of interest to the LSCM audience.

Additionally, most investigations that tap into Nudge theory tend to focus on unambiguous nudges with limited attention being paid to the fact that nudges can be interpreted in a contradictory manner to how they were originally intended (Mukerji & Mannino, 2022). Even though the original proposals of the concept of the nudge left open this possibility of nudges being misinterpreted and consequently misfiring, research in this area has been rather limited (c.f., DiGiacomo, 2020; Seward & Soled, 2020). In the current study, we have investigated one such instance of nudges having unintended consequences. It would be logical to assume the taggers on Kiva were not *intentionally* trying to sabotage the borrower's request by tagging it as a repeat borrower. Instead, they were probably trying to be helpful by providing the crowdfunder a nudge that in normal markets, may have been a good thing (i.e., highlighting the repeat borrower status). Instead, however, in this case said nudge had an unexpected negative consequence. We contend that there may be other such instances in LSCM research, where nudges or information flow may have unintentional, negative consequences. For example, consider the issue of businesses actively engaging with social media. Ordinarily, it is assumed that having such a social media presence is a positive thing and is a sign of a business that relates to its customers. However, what if the market interprets this nudge in an unintended manner because said business shared a message that could be misinterpreted? This creates opportunities for further investigation in the literature through the lens of unintended consequences of nudging—as we have done in this paper.

Finally, most applications of Nudge theory investigate nudging situations that are bipartite in the sense that the party sending the nudge is also the party that will accrue the benefits of actions resulting from the nudge (e.g., Arno & Thomas, 2016; Dhanorkar & Siemsen, 2021; Thorndike et al., 2014). In such cases, it could be argued that if the negative/unintended consequences of nudging were known, the party sending the nudge may opt to be more circumspect in sending the nudge in the first place. The current test condition, however, is a unique tripartite situation in that the volunteers on Kiva are initiating the nudge but have little to do with the borrower or the actual crowdfunder. We contend that there are several other situations where there is such a tripartite situation and the potential for overzealous nudges to make things worse for the market participants. For example, consider the case of online retail marketplaces. In this case, a third intermediary (i.e., review writer) can insert a nudge (i.e., a product review) in between a transaction involving two separate individuals (i.e., buyer and seller). We contend that extensions of Nudge theory into such domains the way we have done, will help to holistically enhance our understanding of the dynamics of nudging.

Limitations

As with most research, this study has its limitations too. First, it has investigated only one firm in the space of crowdfunding, that is, Kiva. Therefore, more research may be needed on other such crowdfunding platforms. Second, our data are in the nature of a repeated cross section, but are not panel data. Consequently, we do not have repeated observations on the same borrower over time. We therefore cannot control for individual specific, time-invariant unobservable borrower characteristics that can affect entrepreneurial outcomes and therefore the ability of the borrower to sustain themselves in business. Future research should endeavor to obtain data on repeated observations for the same borrowers to overcome this limitation. Third, because the study period ends prior to the COVID-19 pandemic, we were unable to capture the effects of a large-scale supply chain disruption on crowdfunder behavior, a natural corollary to the study of the effects of covariate disruptions on BOP entrepreneurs. The effects on these two distinct categories of participants in the supply chain can potentially reinforce each other thereby magnifying deleterious outcomes at the BOP. Finally, we would be remiss if we did not acknowledge that a significant portion of BOP microentrepreneurs may bypass microfinance and fund their business from other sources such as local money lenders, inheritances, thrift, or borrowing from family members. Obviously, we are unable to capture these effects in our data.

REFERENCES

Abdukadirov, S. (2016). *Nudge theory in action: Behavioral design in policy and markets*. Springer.

Aguinis, H., & Gottfredson, R. K. (2010). Best-practice recommendations for estimating interaction effects using moderated multiple regression. *Journal of Organizational Behavior*, *31*(6), 776–786.

Akula, V. (2008). Business basics at the bottom of the pyramid. *Harvard Business Review*.

Allison, T. H., McKenny, A. F., & Short, J. C. (2013). The effect of entrepreneurial rhetoric on microlending investment: An examination of the warm-glow effect. *Journal of Business Venturing*, *28*(6), 690–707.

Andreoni, J. (2006). Philanthropy. *Handbook of the Economics of Giving, Altruism and Reciprocity*, *2*, 1201–1269.

Anglin, A. H., Milanov, H., & Short, J. C. (2022). Religious expression and crowdfunded microfinance success: Insights from role congruity theory. *Journal of Business Ethics*, 1–30. https://doi.org/10.1007/s10551-022-05191-1

Anglin, A. H., Short, J. C., Ketchen, D. J., Jr., Allison, T. H., & McKenny, A. F. (2020). Third-party signals in crowdfunded microfinance:

The role of microfinance institutions. *Entrepreneurship Theory and Practice*, *44*(4), 623–644.

Arno, A., & Thomas, S. (2016). The efficacy of nudge theory strategies in influencing adult dietary behaviour: A systematic review and meta-analysis. *BMC Public Health*, *16*(1), 1–11.

Assadi, D., Ashta, A., & Jung, A. (2018). A tale of three musketeers of alternative finance: Stagnating microcredit, growing P2P online lending and striving for slow money. *Journal of Innovation Economics Management*, *2*(26), 13–36.

Atal, N., Berenguer, G., & Borwankar, S. (2019). Gender diversity issues in the IT industry: How can your sourcing group help? *Business Horizons*, *62*(5), 595–602.

Attuel-Mendes, L. (2016). Crowdfunding and crowdmicrofinance, an evolution of models for entrepreneurship of the poor. *Open Access Library Journal*, *3*(12), 1–7.

Avasthy, A., Dekhne, A., Malik, Y., & Weydringer, J. (2015). Winning supply chain strategies for African markets. *CSCMP Supply Chain Quarterly* Qtr 1.

Ayala, J., & Manzano, G. (2014). The resilience of the entrepreneur. Influence on the success of the business. A longitudinal analysis. *Journal of Economic Psychology*, *42*, 126–135.

Baddeley, M. (2011). *Energy, the environment and behaviour change: A survey of insights from behavioural economics*.

Bagheri, A., Chitsazan, H., & Ebrahimi, A. (2019). Crowdfunding motivations: A focus on donors' perspectives. *Technological Forecasting and Social Change*, *146*, 218–232.

Baklouti, I. (2014). A psychological approach to microfinance credit scoring via a classification and regression tree. *Intelligent Systems in Accounting Finance & Management*, *21*(4), 193–208.

Baldwin, R., Cave, M., & Lodge, M. (2011). *Understanding regulation: Theory, strategy and practice* (2nd ed.). Oxford University Press.

Balkenhol, B., & Hudon, M. (2011). Efficiency. In B. Armendariz & M. Labie (Eds.), *The handbook of microfinance* (pp. 383–396). World Scientific.

Bals, L., & Tate, W. L. (2018). Sustainable supply chain design in social businesses: Advancing the theory of supply chain. *Journal of Business Logistics*, *39*(1), 57–79.

Banerjee, A., & Duflo, E. (2007). The economic lives of the poor. *Journal of Economic Perspectives*, *21*(1), 141–167.

Banerjee, A., Duflo, E., Glennerster, R., & Kinnan, C. (2015). The miracle of microfinance? Evidence from a randomized evaluation. *American Economic Journal: Applied Economics*, *7*(1), 22–53.

Battilana, J., & Dorado, S. (2010). Building sustainable hybrid organizations: The case of commercial microfinance organizations. *Academy of Management Journal*, *53*, 1419–1440.

Beaulieu, T., Sarker, S., & Sarker, S. (2015). A conceptual framework for understanding crowdfunding. *Communications of the Association for Information Systems*, *37*(1), 1–31.

Berg, S. (2018). *Nudge theory explored to boost medication adherence*. American Medical Association. https://www.ama-assn.org/delivering-care/patient-support-advocacy/nudge-theory-explored-boost-medication-adherence

Berns, J. P., Figueroa-Armijos, M., da Motta Veiga, S. P., & Dunne, T. (2020). Dynamics of lending-based prosocial crowdfunding: Using a social responsibility lens. *Journal of Business Ethics*, *161*, 169–185.

Berns, J. P., Shahriar, A. Z. M., & Unda, L. A. (2021). Delegated monitoring in crowdfunded microfinance: Evidence from kiva. *Journal of Corporate Finance*, *66*, 101864.

Bogan, V. L. (2012). Capital structure and sustainability: An empirical study of microfinance institutions. *Review of Economics and Statistics*, *94*(4), 1045–1058.

Brown, R. P., Leeves, G., & Prayaga, P. (2014). Sharing norm pressures and community remittances: Evidence from a natural disaster in the Pacific Islands. *Journal of Development Studies*, *50*(3), 383–398.

Burtch, G., Ghose, A., & Wattal, S. (2014). Cultural differences and geography as determinants of online prosocial lending. *MIS Quarterly*, *38*(3), 773–794.

Cai, S., Lin, X., Xu, D., & Fu, X. (2016). Judging online peer-to-peer lending behavior: A comparison of first-time and repeated borrowing requests. *Information & Management*, *53*(7), 857–867.

Calton, J., Werhane, P., Hartman, L., & Bevan, D. (2013). Building partnerships to create social and economic value at the base of the global development pyramid. *Journal of Business Ethics*, *117*(4), 721–733.

Cao, Z., & Shi, X. (2021). A systematic literature review of entrepreneurial ecosystems in advanced and emerging economies. *Small Business Economics*, *57*, 75–110.

Carter, C. R., Rogers, D. S., & Choi, T. Y. (2015). Toward the theory of the supply chain. *Journal of Supply Chain Management*, *51*(2), 89–97.

Chapagain, T., & Raizada, M. (2017). Impacts of natural disasters on smallholder farmers: Gaps and recommendations. *Agriculture & Food Security*, *6*(39), 1–16.

Chelekis, J., & Mudambi, S. (2010). MNCs and micro-entrepreneurship in emerging economies: The case of Avon in the Amazon. *Journal of International Management*, *16*(4), 412–424.

Chliova, M., Brinckmann, J., & Rosenbusch, N. (2015). Is microcredit a blessing for the poor? A meta-analysis examining development outcomes and contextual considerations. *Journal of Business Venturing*, *30*(3), 467–487.

Choudhary, V., Shunko, M., Netessine, S., & Koo, S. (2022). Nudging drivers to safety: Evidence from a field experiment. *Management Science*, *68*(6), 4196–4214.

Cull, R., Demirgüç-Kunt, A., & Jonathan, M. (2016). The microfinance business model: Enduring subsidy and modest profit. *World Bank Economic Review*, *32*(2), 221–244.

Cull, R., Demirguc-Kunt, A., & Morduch, J. (2007). Financial performance and outreach: A global analysis of leading microbanks. *The Economic Journal*, *117*(517), F107–F133.

Daher, L., & Le Saout, E. (2013). Microfinance and financial performance. *Strategic Change*, *22*(1–2), 31–45.

Davis-Sramek, B., & Richey, R. G. (2022). Logistics for a better world. *Journal of Business Logistics*, *43*, 294–296.

Debnath, R., & Bardhan, R. (2020). India nudges to contain COVID-19 pandemic: A reactive public policy analysis using machine-learning based topic modelling. *PLoS One*, *15*(9), e0238972.

Dhanorkar, S., & Siemsen, E. (2021). How nudges Lead to improved energy efficiency in manufacturing: Evidence from archival data and a field study. *Production and Operations Management*, *30*(10), 3735–3757.

DiGiacomo, A. (2020). *Situated cognition: A lens for exploring behaviour change across contexts* (Doctoral dissertation, University of British Columbia).

Donohue, K., Özer, Ö., & Zheng, Y. (2020). Behavioral operations: Past, present, and future. *Manufacturing & Service Operations Management*, *22*(1), 191–202.

Dorfleitner, G., Oswald, E. M., & Röhe, M. (2020). The access of microfinance institutions to financing via the worldwide crowd. *The Quarterly Review of Economics and Finance*, *75*, 133–146.

Dorfleitner, G., Oswald, E. M., & Zhang, R. (2021). From credit risk to social impact: On the funding determinants in interest-free peer-to-peer lending. *Journal of Business Ethics*, *170*, 375–400.

Drake, D., & Rhyne, E. (2002). *The commercialization of microfinance: Balancing business and development*. Kumarian Press.

Duarte, A. L. D. C. M., Macau, F., e Silva, C. F., & Sanches, L. M. (2019). Last mile delivery to the bottom of the pyramid in Brazilian slums. *International Journal of Physical Distribution & Logistics Management*, *49*(5), 473–491.

Duflo, E., Kremer, M., & Robinson, J. (2011). Nudging farmers to use fertilizer: Theory and experimental evidence from Kenya. *American Economic Review*, *101*(6), 2350–2390.

Easton, S. (2014). When push comes to shove: Inside the NSW nudge unit. https://www.themandarin.com.au/874-nudge-unit/

Ebert, P., & Freibichler, W. (2017). Nudge management: Applying behavioural science to increase knowledge worker productivity. *Journal of Organization Design*, *6*(1), 1–6.

Esper, T. L., Castillo, V. E., Ren, K., Sodero, A., Wan, X., Croxton, K. L., Knemeyer, A. M., DeNunzio, S., Zinn, W., & Goldsby, T. J. (2020). Everything old is new again: The age of consumer-centric supply chain management. *Journal of Business Logistics*, *41*(4), 286–293.

Estren, M. J. (2018). The ethics of preservation: Where psychology and conservation collide. In *The Palgrave handbook of practical animal ethics* (pp. 493–509). Palgrave Macmillan.

Fawcett, S. E., & Waller, M. A. (2015). The quest for societal ROI in the midst of the perfect storm: Can SCM set the standard for twenty-first century business education? *Journal of Business Logistics*, *36*(1), 1–8.

Flygansvaer, B., Samuelsen, A. G., & Støyle, R. V. (2021). The power of nudging: How adaptations in reverse logistics systems can improve end-consumer recycling behavior. *International Journal of Physical Distribution & Logistics Management*, *51*, 958–977.

Flynn, B., Huang, X., & Zhao, X. (2015). Supply chain management in emerging markets: Critical research issues. *Journal of Supply Chain Management*, *51*(1), 3–5.

Fonrouge, C., & Bolzani, D. (2019). Motivations and barriers to crowdlending as a tool for diasporic entrepreneurial finance. *International Journal of Entrepreneurship and Innovation Management*, *23*(6), 667–688.

Gleasure, R., & Feller, J. (2016). Emerging technologies and the democratisation of financial services: A metatriangulation of crowdfunding research. *Information and Organization*, *26*(4), 101–115.

Gold, S., Chowdhury, I. N., Huq, F. A., & Heinemann, K. (2020). Social business collaboration at the bottom of the pyramid: The case of orchestration. *Business Strategy and the Environment*, *29*(1), 262–275.

Goldsby, T. J., Michael Knemeyer, A., Miller, J. W., & Wallenburg, C. M. (2013). Measurement and moderation: Finding the boundary conditions in logistics and supply chain research. *Journal of Business Logistics*, *34*(2), 109–116.

Golicic, S., & Sebastiao, H. (2011). Supply chain strategy in nascent markets: The role of supply chain development in the commercialization process. *Journal of Business Logistics*, *32*(3), 254–273.

Haldar, A., & Stiglitz, J. (2016). Group lending, joint liability, and social capital: Insights from the indian microfinance crisis. *Politics and Society*, *44*(4), 459–497.

Hall, J., & Matos, S. (2010). Incorporating impoverished communities in sustainable supply chains. *International Journal of Physical Distribution & Logistics Management*, *40*(1/2), 124–147.

Heltberg, R., & Lund, N. (2009). Shocks, coping, and outcomes for Pakistan's poor: Health risks predominate. *The Journal of Development Studies*, *45*(6), 889–910.

Heltberg, R., Oviedo, A. M., & Talukdar, F. (2015). What do household surveys really tell us about risk, shocks, and risk management in the developing world? *The Journal of Development Studies*, *51*(3), 209–225.

Heredia, J., Geldes, C., Flores, A., & Heredia, W. (2020). The new strategy to the legitimation of informal firms. The effects of the signals and biases on decisions about crowdfunding digital transformation. *Journal of Technology Management & Innovation*, *15*(4), 54–62.

Hoegen, A., Steininger, D. M., & Veit, D. (2018). How do investors decide? An interdisciplinary view of decision-making in crowdfunding. *Electronic Markets*, *28*(3), 339–365.

Hong, P., Schoenherr, T., Hult, G. T. M., Zinn, W., & Goldsby, T. J. (2019). Cross-functional management and base-of-pyramid issues in logistics and supply chain management. *Journal of Business Logistics*, *40*(2), 76–81.

Iyengar, D., Nilakantan, R., & Rao, S. (2021). On entrepreneurial resilience among micro-entrepreneurs in the face of economic disruptions... a little help from friends. *Journal of Business Logistics*, *42*(3), 360–380.

Jancenelle, V. E., Javalgi, R. R. G., & Cavusgil, E. (2018). The role of economic and normative signals in international prosocial crowdfunding: An illustration using market orientation and psychological capital. *International Business Review*, *27*(1), 208–217.

Jawaid, N. Q. (2010). *The Lebanese schism?: Understanding localities of microcredit, poverty, and politics* (Doctoral dissertation, Massachusetts Institute of Technology).

Jenkins, A., Wiklund, J., & Brundin, E. (2014). Individual responses to firm failure: Appraisals, grief, and the influence of prior failure experience. *Journal of Business Venturing*, *29*(1), 17–33.

Jenq, C., Pan, J., & Theseira, W. (2015). Beauty, weight, and skin color in charitable giving. *Journal of Economic Behavior & Organization*, *119*, 234–253.

Joncourt, S., Gebauer, H., Reynoso, J., Cabrera, K., Valdes, A., & Greve, K. (2019). Extending the base-of-the-pyramid concept. *Service. Science*, *11*(3), 241–261.

Kahneman, D. (2011). *Thinking fast and slow*. Farrar, Straus and Giroux.

Kandachar, P., & Halme, M. (2007). An exploratory journey towards the research and practice of the base of the pyramid. *Greener Management International*, *51*, 3–17.

Karamchandani, A., Kubzansky, M., & Lalwani, N. (2011). Is the bottom of the pyramid really for you. *Harvard Business Review*, *89*(3), 107–111.

Karnani, A. (2007). The mirage of marketing to the bottom of the pyramid: How the private sector can help alleviate poverty. *California Management Review*, *49*(4), 90–111.

Kearney. (2021). *2021 Global retail development index*. https://www.kearney.com/global-retail-development-index/2021

Kinnick, K. N., Krugman, D. M., & Cameron, G. T. (1996). Compassion fatigue: Communication and burnout toward social problems. *Journalism & Mass Communication Quarterly*, *73*(3), 687–707.

Kiva. (2021). *Kiva loan taggers team*. http://kivaloantaggers.blogspot.com/p/q-for-new-taggers.html

Klapper, L., El-Zoghbi, M., & Hess, J. (2016). *Achieving the sustainable development goals: The role of financial inclusion*. CGAP.

Kosters, M., & Van der Heijden, J. (2015). From mechanism to virtue: Evaluating nudge theory. *Evaluation*, *21*(3), 276–291.

Last, B. S., Buttenheim, A. M., Timon, C. E., Mitra, N., & Beidas, R. S. (2021). Systematic review of clinician-directed nudges in healthcare contexts. *BMJ Open*, *11*(7), e048801.

Lee, H. L., & Tang, C. S. (2018). Socially and environmentally responsible value chain innovations: New operations management research opportunities. *Management Science*, *64*(3), 983–996.

Lehner, M., Mont, O., & Heiskanen, E. (2016). Nudging–a promising tool for sustainable consumption behaviour? *Journal of Cleaner Production*, *134*, 166–177.

Leke, A., Fiorini, R., Dobbs, R., Thompson, F., Suleiman, A., & Wright, D. (2014). *Nigeria's renewal: Delivering inclusive growth in Africa's largest economy*. McKinsey Global Institute.

London, T., & Hart, S. (2004). Reinventing strategies for emerging markets: Beyond the transnational model. *Journal of International Business Studies*, *35*(5), 350–370.

Luo, X., Ge, L., & Wang, C. A. (2022). Crowdfunding for microfinance institutions: The new Hope? *MIS Quarterly*, *46*(1), 373–400.

Mahapatra, S., William, W., & Padhy, R. (2019). Alignment in the base of the pyramid producer supply chains: The case of the handloom sector in Odisha, India. *Journal of Business Logistics*, *40*(2), 126–144.

Marakkath, N., & Attuel-mendes, L. (2015). Can microfinance crowdfunding reduce financial exclusion? Regulatory issues. *International Journal of Bank Marketing*, *33*(5), 624–636.

Marom, D. (2013). Crowd-empowered microfinance. In J. P. Gueyie, R. Manos, & J. Yaron (Eds.), *Microfinance in developing countries* (pp. 127–151). Palgrave Macmillan.

Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics*, *22*(2), 1–25.

Mersland, R., & Strøm, R. Ø. (2010). Microfinance mission drift? *World Development*, *38*, 28–36.

Mia, M. A., & Lee, H. A. (2017). Mission drift and ethical crisis in microfinance institutions: What matters? *Journal of Cleaner Production*, *164*, 102–114.

Mol, M. J., Stadler, C., & Ariño, A. (2017). Africa: The new frontier for global strategy scholars. *Global Strategy Journal*, *7*(1), 3–9.

Mollenkopf, D. A., Ozanne, L. K., & Stolze, H. J. (2020). A transformative supply chain response to COVID-19. *Journal of Service Management*, *32*(2), 190–202.

Momsen, K., & Stoerk, T. (2014). From intention to action: Can nudges help consumers to choose renewable energy? *Energy Policy*, *74*, 376–382.

Moss, T. W., Neubaum, D. O., & Meyskens, M. (2015). The effect of virtuous and entrepreneurial orientations on microfinance lending and repayment: A signaling theory perspective. *Entrepreneurship Theory and Practice*, *39*(1), 27–52.

Mukerji, N., & Mannino, A. (2022). Nudge me if you can! Why order ethicists should embrace the nudge approach. *Journal of Business Ethics*, 1–16. https://doi.org/10.1007/s10551-022-05214-x

Murakami, M., & Tsubokura, M. (2017). Evaluating risk communication after the Fukushima disaster based on nudge theory. *Asia Pacific Journal of Public Health*, *29*(2_suppl), 193S–200S.

NABARD. (2016). *Microfinance in India: 2016–2017*. www.nabard.org/auth/writereaddata/tender/1307174808Status%20of%20Microfinance%20in%20India%202016-17.pdf

Nilakantan, R., Iyengar, D., Datta, S. K., & Rao, S. (2021). On ethical violations in microfinance backed small businesses: Family and household welfare. *Journal of Business Ethics*, *172*(4), 785–802.

Nilakantan, R., Iyengar, D., & Rao, S. (2019). On operations and marketing in microfinance-backed enterprises: Structural embeddedness and enterprise viability. *International Journal of Physical Distribution & Logistics Management*, *49*(5), 514–533.

Nordin, N., Siti-Nabiha, A. K., & Kamalia, Z. (2019). Microfinancing influence on micro-entrepreneurs business growth: Mediating role of psychological and social capital. *Journal of Entrepreneurship, Business and Economics*, *7*(2), 130–161.

Omisore, A. G. (2018). Attaining sustainable development goals in sub-saharan Africa; the need to address environmental challenges. *Environmental Development*, *25*, 138–145.

Pal, R., & Altay, N. (2019). Identifying key success factors for social enterprises serving base-of-pyramid markets through analysis of value chain complexities. *Journal of Business Logistics*, *40*(2), 161–179.

Papke, L. E., & Wooldridge, J. M. (1996). Econometric methods for fractional response variables with an application to 401 (k) plan participation rates. *Journal of Applied Econometrics*, *11*(6), 619–632.

Pitta, D. A., Guesalaga, R., & Marshall, P. (2008). The quest for the fortune at the bottom of the pyramid: Potential and challenges. *Journal of Consumer Marketing*, *25*(7), 393–401.

Prahalad, C. (2009). *The fortune at the bottom of the pyramid: Eradicating poverty through profits*. Revised and Updated 5th Anniversary ed. Wharton School Publishing.

Prochaska, J. O., Norcross, J. C., & DiClemente, C. C. (1994). *Changing for good* (pp. 40–56). Avon Books.

Pullman, M., Longoni, A., & Luzzini, D. (2018). Emerging discourse incubator: The roles of institutional complexity and hybridity in social impact supply chain management. *Journal of Supply Chain Management*, *54*(2), 3–20.

Rangan, K., Chu, M., & Petkoski, D. (2011). Segmenting the base of the pyramid. *Harvard Business Review*, *89*(6), 113–117.

Rao, S., Nilakantan, R., Iyengar, D., & Lee, K. B. (2019). On the viability of fixing leaky supply chains for the poor through benefit transfers: A call for joint distribution. *Journal of Business Logistics*, *40*(2), 145–160.

Rosca, E., Möllering, G., Rijal, A., & Bendul, J. C. (2019). Supply chain inclusion in base of the pyramid markets: A cluster analysis and implications for global supply chains. *International Journal of Physical Distribution & Logistics Management*, *49*(5), 575–598.

Roy, J., & Chowdhury, P. R. (2009). Public-private partnerships in micro-finance: Should NGO involvement be restricted? *Journal of Development Economics*, *90*(2), 200–208.

Sakakibara, J., Kyriazis, E., & Algie, J. (2019). Poisoning the well: A donation request fatigue behaviour model. *Third Sector Review*, *25*(2), 115–146.

Sama, L. M., & Casselman, R. M. (2013). Profiting from poverty: Ethics of microfinance in BOP. *South Asian Journal of Global Business Research*, *2*(1), 82–103.

Sarkar, D. N., Kundu, K., & Chaudhuri, H. R. (2018). A qualitative study on the survival strategies of retailers in BoP markets. In *Bottom of the pyramid marketing: Making, shaping and developing BoP markets*. Emerald Publishing Limited.

Schrader, C., Freimann, J., & Seuring, S. (2012). Business strategy at the base of the pyramid. *Business Strategy and the Environment*, *21*(5), 281–298.

Seelos, C., & Mair, J. (2007). Profitable business models and market creation in the context of deep poverty: A strategic view. *Academy of Management Perspectives*, *21*(4), 49–63.

Seward, M. W., & Soled, D. R. (2020). Unintended consequences in traffic-light food labeling: A call for mixed methods in public health research. *Journal of American College Health*, *68*(5), 465–467.

Shetty, S. (2013). Microcredit, poverty, and empowerment: Exploring the connections. In *The credibility of microcredit* (pp. 163–198). Brill.

Simanis, E. (2012). Reality check at the bottom of the pyramid. *Harvard Business Review*, *90*(6), 120–125.

Simanis, E., & Duke, D. (2014). Profits at the bottom of the pyramid. *Harvard Business Review*, *92*(10), 86–93.

Singh, R., Bakshi, M., & Mishra, P. (2015). Corporate social responsibility: Linking bottom of the pyramid to market development? *Journal of Business Ethics*, *131*, 361–373.

Siwale, J., & Ritchie, J. (2012). Disclosing the loan officer's role in microfinance development. *International Small Business Journal*, *30*(4), 432–450.

Sodhi, M. S., & Knuckles, J. (2021). Development-aid supply chains for economic development and post-disaster recovery. *Production and Operations Management*, *30*(12), 4412–4434.

Sodhi, M. S., & Tang, C. S. (2016). Supply chain opportunities at the bottom of the pyramid. *Decision*, *43*(2), 125–134.

Steigenberger, N., & Wilhelm, H. (2018). Extending signaling theory to rhetorical signals: Evidence from crowdfunding. *Organization Science*, *29*(3), 529–546.

Stiglitz, J. E. (1989). Imperfect information in the product market. *Handbook of Industrial Organization*, *1*, 769–847.

Stoknes, P. E. (2015). *What we think about when we try not to think about global warming: Toward a new psychology of climate action*. Chelsea Green Publishing.

Sunstein, C. R., & Reisch, L. A. (2014). Automatically green: Behavioral economics and environmental protection. *Harvard Environmental Law Review*, *38*, 127.

Tang, C. S. (2022). Innovative technology and operations for alleviating poverty through women's economic empowerment. *Production and Operations Management*, *31*(1), 32–45.

Thaler, R. H. (2018). From cashews to nudges: The evolution of behavioral economics. *American Economic Review*, *108*(6), 1265–1287.

Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving decisions about health, wealth, and happiness*. Penguin.

Thorndike, A. N., Riis, J., Sonnenberg, L. M., & Levy, D. E. (2014). Traffic-light labels and choice architecture: Promoting healthy food choices. *American Journal of Preventive Medicine*, *46*(2), 143–149.

Thunström, L., Gilbert, B., & Ritten, C. J. (2018). Nudges that hurt those already hurting–distributional and unintended effects of salience nudges. *Journal of Economic Behavior & Organization*, *153*, 267–282.

UN-FAO. (2015). *State of Food Insecurity in the World. Meeting the 2015 international hunger targets: taking stock of uneven progress*. FAO. https://www.fao.org/3/i4646e/i4646e.pdf

Vachani, S., & Smith, N. (2008). Socially responsible distribution: Distribution strategies for reaching the bottom of the pyramid. *California Management Review*, *50*(2), 52–84.

Van Diepen, M., Donkers, B., & Franses, P. H. (2009). Does irritation induced by charitable direct mailings reduce donations? *International Journal of Research in Marketing*, *26*(3), 180–188.

Wallenburg, C. M., Einmahl, L., Lee, K. B., & Rao, S. (2021). On packaging and product returns in online retail—Mailing boxes or sending signals? *Journal of Business Logistics*, *42*(2), 291–308.

Wang, Y., & Pettit, S. (2022). A primer on supply chain digital transformation. In *Digital Supply Chain Transformation* (pp. 121–124). Cardiff University Press.

Watson, N., & Kraiselburd, S. (2009). *Vidagas: Villagereach—The Mozambican foundation for community development joint venture* (p. 609107). Harvard Business School Case #.

WorldBank. (2017). *Revolutionizing microfinance: Insights from the 2017 global symposium on microfinance*. https://pubdocs.worldbank.org/en/332301505318076916/GSM2017-Synthesis-report-draft-August-9th-2017-Final.pdf

Wuttke, D., Blome, C., Foerstl, K., & Henke, M. (2013). Managing the innovation adoption of supply chain finance – empirical evidence from six European case studies. *Journal of Business Logistics*, *34*(2), 148–166.

Yin, X., Chen, X., Xu, X., & Zhang, L. (2020). Tax or subsidy? Optimal carbon emission policy: A supply chain perspective. *Sustainability*, *12*(4), 1548.

Yum, H., Lee, B., & Chae, M. (2012). From the wisdom of crowds to my own judgment in microfinance through online peer-to-peer lending platforms. *Electronic Commerce Research and Applications*, *11*(5), 469–483.

Yunus, M. (2000). How donor funds could better reach and support grassroots microcredit programmes: Working towards the microcredit summit's goal and core themes. *Bangladesh Development Studies*, *26*(2–3), 1–14.

Zomorrodi, M., Fayezi, S., Lau, K. H., & McMurray, A. (2019). Supply chain adaptations for the base-of-the-pyramid business: Towards a theoretical model. *International Journal of Physical Distribution & Logistics Management*, *49*(5), 599–624.

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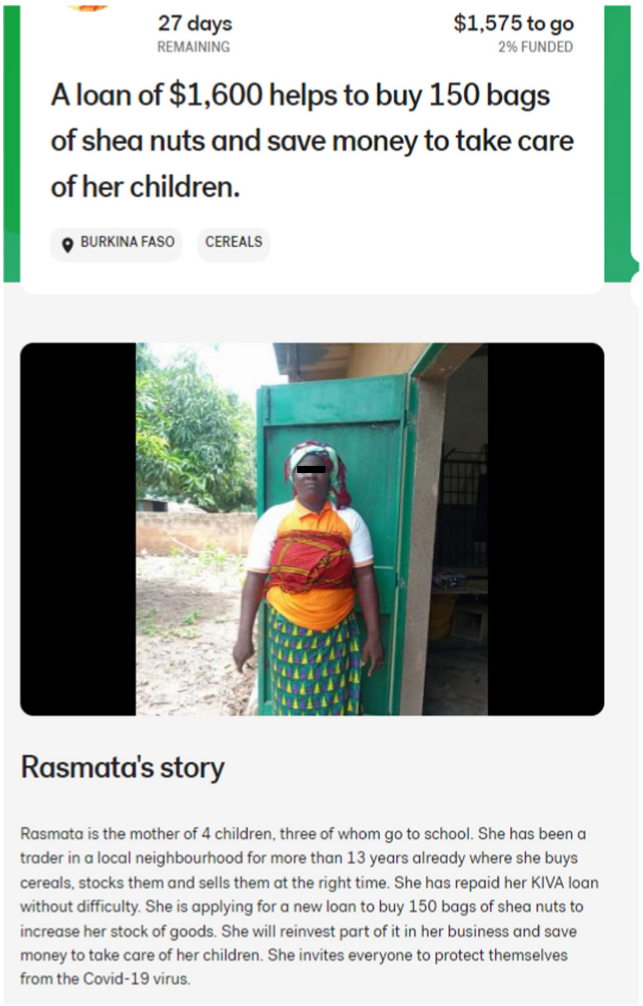
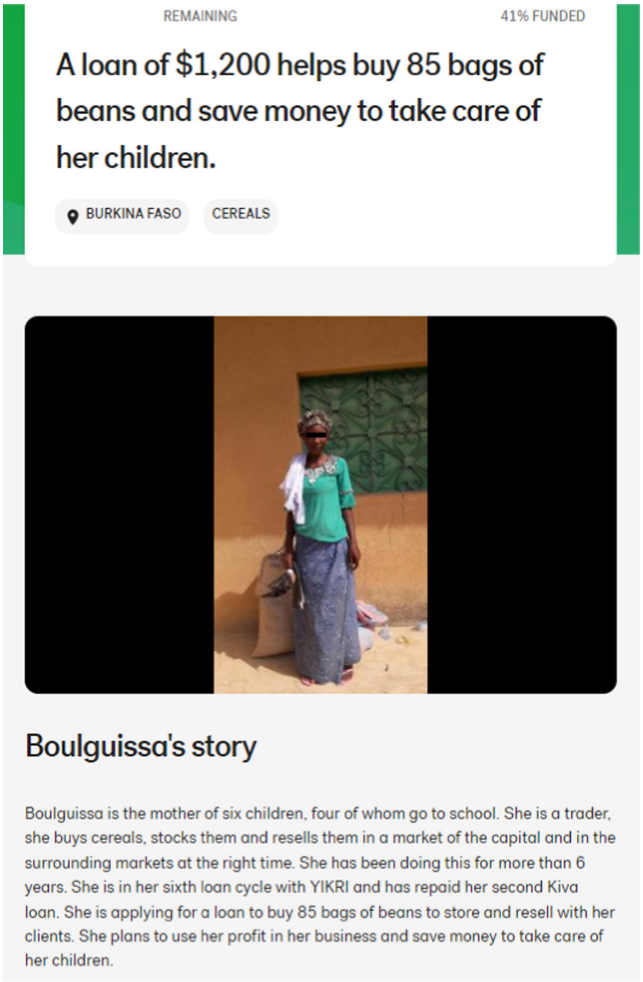
APPENDIX 1

EXAMPLES OF EXPANSION AND NONEXPANSION LOANS

EXAMPLES OF EXPANSION LOAN REQUESTS

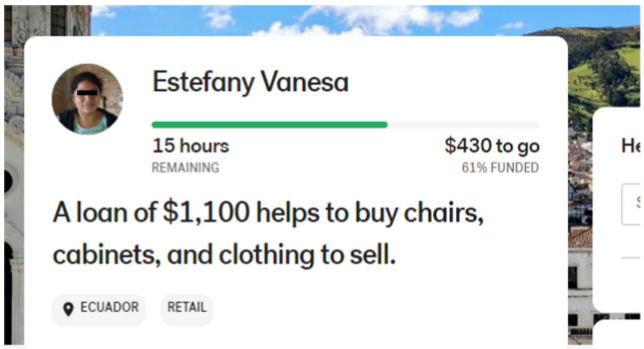

27 days
REMAINING
$1,575 to go
2% FUNDED
A loan of $1,600 helps to buy 150 bags of shea nuts and save money to take care of her children.
BURKINA FASO
CEREALS
Rasmata's story
Rasmata is the mother of 4 children, three of whom go to school. She has been a trader in a local neighbourhood for more than 13 years already where she buys cereals, stocks them and sells them at the right time. She has repaid her KIVA loan without difficulty. She is applying for a new loan to buy 150 bags of shea nuts to increase her stock of goods. She will reinvest part of it in her business and save money to take care of her children. She invites everyone to protect themselves from the Covid-19 virus.

EXAMPLES OF NONEXPANSION LOAN REQUESTS


REMAINING
41% FUNDED
A loan of $1,200 helps buy 85 bags of beans and save money to take care of her children.
BURKINA FASO
CEREALS
Boulguissa's story
Boulguissa is the mother of six children, four of whom go to school. She is a trader, she buys cereals, stocks them and resells them in a market of the capital and in the surrounding markets at the right time. She has been doing this for more than 6 years. She is in her sixth loan cycle with YIKRI and has repaid her second Kiva loan. She is applying for a loan to buy 85 bags of beans to store and resell with her clients. She plans to use her profit in her business and save money to take care of her children.

APPENDIX 2

LISTING ON KIVA THAT FELL UNDER THE "RETAIL" CATEGORY

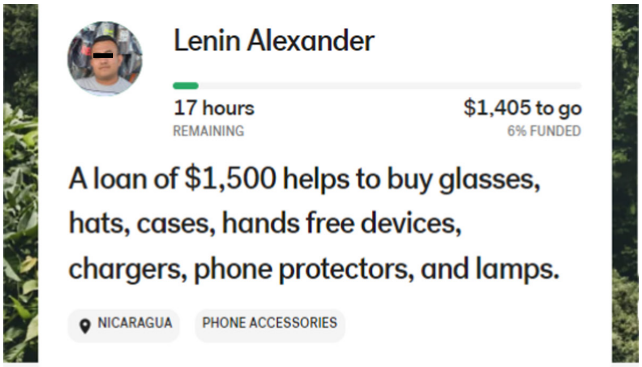


Estefany Vanesa's story

Estefany Vanesa, 25, is married and has 2 minor children. Her husband is privately employed. They live in the Canton of Montecristi, a place with hardworking people who work making handicrafts. In spite of the difficulties they face, they are continuing to fight for the well-being of their families.

Estefany Vanesa is a very hardworking woman who is seeking a way to earn an income in order to help her husband with the household expenses. She has a business selling personal care and household products, utilizing a passbook system of credit. She sells door-to-door, from her house, and over the phone.

LISTINGS ON KIVA THAT DID NOT FALL UNDER THE "RETAIL" CATEGORY BUT WERE INCLUDED IN THE STUDY



Lenin Alexander's story

This micro-entrepreneur is Lenin. He is humble and has a desire to improve himself. He has many years of experience selling accessories and cases for mobile phones. Over time he has diversified. Currently his business is stable and strong thanks to his strong leadership and a previous loan from KIVA. Lenin wants to continue improving himself as a business person, and for that reason he is asking for a new loan from Kiva and his field partner in order to buy glasses, hats, cases, hands free devices, chargers, phone protectors, and lamps. In the near future he wants to have a stable store location.

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